

Ken Haywood TM



BRITISH ENTOMOLOGY;

BEING

ILLUSTRATIONS AND DESCRIPTIONS

OF

THE GENERA OF INSECTS

FOUND IN

GREAT BRITAIN AND IRELAND:

CONTAINING

COLOURED FIGURES FROM NATURE

OF THE MOST RARE AND BEAUTIFUL SPECIES,

AND IN MANY INSTANCES

OF THE PLANTS UPON WHICH THEY ARE FOUND.

BY JOHN CURTIS, F.L.S.

HONORARY MEMBER OF THE ASHMOLEAN SOCIETY OF OXFORD,
OF THE IMPERIAL AND ROYAL ACADEMY OF FLORENCE,
OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, ETC.

VOL. V.

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TO

JAMES CHARLES DALE, Esq. M.A. F.L.S. &c.

WHOSE FRIENDSHIP AND KINDNESS

TO THE AUTHOR

HAVE BEEN EQUALLED ONLY

BY HIS LIBERAL CONTRIBUTIONS AND ZEALOUS ENDEAVOURS

TO RENDER THIS WORK MORE USEFUL TO SCIENCE,

THE PRESENT VOLUME

IS DEDICATED,

AS A SINCERE TOKEN OF REGARD AND ESTEEM.

London, Dec. 1, 1832.

TO
CHARLES G. B. DAUBENY, M.D., F.R. L. & G.S.,
PROFESSOR OF CHEMISTRY AT OXFORD,

THIS VOLUME

IS DEDICATED,

AS A GRATEFUL REMEMBRANCE OF HIS

KINDNESS AND FRIENDSHIP,

AND AS A TESTIMONY OF THE SINCERE ESTEEM OF

THE AUTHOR.

London, Dec. 1, 1833.

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ERRATA.

- Folio.
- 3^b line 18 for Caterpillar read Caterpillars; and for it might read they might.
line 36 for Pupa read Pupæ.
- 7 for Odenesis read Odonestis.
- 7^b line 25 for patatoria read potatoria.
- 21^b line 2, 6, 8 & 24, for russica read russula.
- 48 line 24 omit sometimes tuberculated.
line 28 for n. 11 read n. 8.
- 53 line 24 for longest read shortest.
25 for shortest read longest.
- 53^b line 18 for Millard read Millar.
- 56^b line 23 after abdomen add and simple antennæ.
- 177 *Miselia bimaculosa* is said to have been taken at Bristol in June.
- 195^b S. Drurii. I possess a specimen found in September in the Borough, resting upon the leaf of a plant, apparently just out of the Chrysalis.
- 205^b line 25 for p. 3 read 332.
- 264 Mr. C. C. Babington, of St. John's College, in a letter to me says, "*Thecla Pruni* was discovered by myself at Monk's Wood near Sawtry, Huntingdonshire, the last week of June this year; the Rev. W. P. Garnons of Sidney College, afterwards accompanied me to the same wood the first week in July, when we found the insect in the greatest plenty."
- 578 Mr. Dale's specimen of *P. Podalirius* was taken by Dr. Abbot.



Publ. by S. Curtis Sculp. 1836

PAPILIO PODALIRIUS.

The Scarce Swallow-tail Butterfly.

ORDER Lepidoptera. FAM. Papilionidæ.

Type of the Genus, Papilio Podalirius Linn.

Dana I 106

PAPILIO Linn., &c.

Antennæ inserted on the crown of the head, somewhat approximating, composed of about 30 joints, shortest at the base, terminated by an elongated, subcompressed and curved club (1).

Maxillæ spiral and tapering, as long as the antennæ, horny and smooth at the apex (3).

Labial palpi short, not meeting, curved upward and placed close to the face (7, 4); very hairy, the apical joint completely concealed (4); triarticulate, basal joint long, very stout and curved, 2nd the same length, reverse-clavate, being curved and slender towards the apex, 3rd joint minute ovate (4 a).

Head *small trigonate and obtuse* (7 profile, 7* front view): eyes *large prominent and ovate*. Thorax *robust, elongate ovate*; collar *rather elongated and narrow*. Abdomen *rather short and ovate-conic*.

Wings *closed and elevated in repose*; superior *elongate-trigonate, scarcely falcate, entire*; inferior *scalloped, terminating in a long narrow tail, the abdominal margin excised*: cilia *none*. Legs *perfect, alike in both sexes*: tibiæ, *anterior the shortest, 4 posterior of equal length, with long spurs at the apex*: claws *simple, long, slender, curved and acute*; pulvilli *small*.

Larvæ *naked, with 6 pectoral, 8 abdominal and 2 anal feet*; furnished with a *furcate organ on the neck which they can exert when alarmed*.

Pupæ *attached by the tail and suspended round the middle by a thread*.

PODALIRIUS Linn.—Curt. Guide, Gen. 763. 2.

Whitish-yellow, superior wings with 3 broad black bands, the 2 basal ones continued down the inferior wings, the 3rd with a long black spot on each side at the costa, which is orange, the posterior margin with a very broad black fimbria divided by an orange stripe towards the apex: inferior wings with a broad black margin, an anal spot of the same colour, bearing a blue lunule, orange above with a yellow margin, beneath ochreous; posterior margin with 4 or 5 blue lunules, the edges indented with ochreous crescents, tips of the tails ochreous also.

In the Cabinets of Mr. Read and Mr. Dale.

PAPILIO, which is the type of the most beautiful family amongst the insect tribes, has formed the theme of poets from the earliest ages, and the Butterfly has been regarded by the wisest and best men as an emblem of the human soul. Every one who has observed the graceful, light and varied evolutions of this charming race, must have felt admiration and delight in contemplating the elegant form, combined with the beautiful

and splendid colouring, of these lively children of Nature, as

“ On the gay bosom of some fragrant flower,
They idly flutt'ring live their little hour;
Their life all pleasure, and their task all play,
All spring their age, and sunshine all their day.”

Two species of *Papilio* have been taken in England.

1. *P. Machaon* Linn.—*Sam. Comp. pl. 6. f. 1.*

Wings yellow, nervures black, as well as the base and hinder margin which bears a row of 8 yellow spots; inferior with a black fimbria, blue in the centre, with 7 lunate yellow spots and a red one at the anal angle.

The Caterpillar of this species feeds on Rue, Fennel, Carrot, and especially on the *Selinum palustre* (pl. 580.), upon which I have found it of every size, in July, on the extensive marshes of Norfolk, Cambridgeshire, and Whittlesea Mere. The Butterfly has been taken from the end of May to the beginning of August at the same places, and also in Dorsetshire. It is very active on the wing, but is easily taken at sunset resting on plants.

2. *P. Podalirius* Linn.—*Curt. Brit. Ent. pl. 578. ♀.*

It is with much satisfaction that I commence this Volume with a figure of the Scarce Swallow-tail, because it is a great ornament to this Work, and will relieve those who have stated that it has been found in Britain from the imputations that have been cast upon them. For my own part I never could see any reason to doubt Dr. Berkenhout's authority, for he describes *both* species, and adds, *P. Podalirius* is “rare in woods;” Mr. Haworth, in his *Lep. Brit.*, says Dr. Abbot informed him “that he took in May last (1803), near Clapham Park Wood, in Bedfordshire, a specimen of *Papilio Podalirius* in the winged state;” and the Rev. F. W. Hope, in a letter to Mr. Dale, dated 1822, says, “I have *captured* the long-desired and much-doubted *P. Podalirius*, and since then I have seen another on the wing;” and yet in 1828 Mr. Stephens states, as “no *authentic* instance of its capture is recorded, it seems *absurd* to consider it any longer as a British species:” he is no less mistaken with regard to its northern range, for Dr. Bromfield informs me that it is very abundant near Berlin, and in Russia up to Moscow, and M. Hoffman assures me that it is found even at Hamburg.

All doubts are now cleared up by the specimen before us, which was taken by W. H. Rudston Read, Esq., when he was at school at Eton College; and to him I am indebted for the loan of the specimen, which is darker than any other I have ever seen. The following extract is from his letter: “I captured it myself in my hat near a large nursery garden at Slough, two miles from Windsor, in 1822. The month I cannot tell you, but it could not be in August, as then we were always absent on vacation.”

The larva and pupa are copied from Hübner; the former feeds on the Apple, Peach, Almond, Barbery, Plum and Sloe.

The Plant is *Pyrus communis* (Pear-tree).



PIERIS CRATÆGI.

The black-veined white Butterfly.

ORDER Lepidoptera. FAM. Papilionidæ.

*Type of the Genus, Papilio Cratægi Linn. = Leucanica Cratægi.*PIERIS Schr., Lat., Horsf.—Pontia Fab., Sam.—Papilio Linn., &c. *Book I 110**Antennæ* inserted on the crown of the head, close to the eyes, rather slender, composed of about 35 joints; the club not abrupt (fig. 1. shows portions of the base and apex).*Maxillæ* slender and spiral, scarcely so long as the antennæ (3).*Labial Palpi* porrected obliquely, divaricating at the apex (7. 4), rather short and slender, clothed with scales and hairy beneath, excepting the apical joint (7*. 4), triarticulate, 1st and 2nd joints robust, the former twice as long as the latter and curved at the base, 3rd joint as long as the 2nd slender and narrowed at the middle (4 a).Head *transverse*. Eyes *large*. Thorax and Abdomen *rather slender*.Wings *subdiaphanous*, surrounded by a distinct nervure, the cilia exceedingly short, discoidal cells closed: superior subtrigonate, the apex and posterior angle very round, the apical nervure furcate: inferior somewhat ovate, with a shallow groove to receive the abdomen. Feet *perfect*, alike in both sexes. Claws *strong and bifid* with a slender pubescent appendage outside at the base (8). Pulvilli *long and narrow* (8+).Larvæ *elongated*, slightly attenuated towards the head, cylindrical and hairy; with 6 pectoral, 8 abdominal, and 2 anal feet.Pupæ *attached by the tail* and a thread round the middle, rather long, head beaked, tail conical.

CRATÆGI Linn. Faun. Suec. 269. 1034.—Haw. 6. 3.—Curtis's Guide, Gen. 765.

Pale yellowish white. Antennæ velvety black, tipped with ochre. Upper side, with the nervures and margin black: superior wings with triangular fuscous marks on the posterior margin at the termination of each nervure, and a long black mark on the transverse nervure of the discoidal cell. Under side similar to the upper, but the nervures are blacker and more or less edged with fuscous.

*In the Author's and other Cabinets.**Genus in Leucanica Cratægi Linn. 1774.
P. Cratægi Linn. Faun. Suec. 269. 1034. 1774.
P. Cratægi Linn. Faun. Suec. 269. 1034. 1774.*

THE black-veined-white, is one of the few butterflies that cannot be mistaken for any other species, and it is remarkable for having both sides very similar, which is scarcely the case in any of the other British Papilionidæ. In this respect, as well as in the semi-transparent wings and short cilia, it approaches *Doritis*. The same characters will distinguish it at once from *Pontia*, which it is further separated from by the equal length of the 2nd and 3rd joints of the palpi, and the shortness of the former joint compared with the basal one. The strong nervure that surrounds each wing has never before been noticed.

The caterpillar (which as well as the pupa is copied from Hübner,) lives upon the white and black thorn, the gooseberry, and many fruit-trees. They live (says Godart) in society under a silken web, in which they form little cases to secure them from the inclemency of the winter season, during which they take no nourishment. At the approach of spring, they break this web, and as they find at that time but few buds, they do great mischief to the trees. Linnæus has in consequence called them *the pest of gardens*. Every evening they return to their web, and do not quit it on rainy days. This is the most favourable time to destroy them.

Fortunately this butterfly is seldom very abundant in England; and from the care taken of our gardens it seems to become annually more scarce. The female is very prolific; and Pallas relates in his Travels that he saw this *Papilio* flying in such vast abundance in the environs of Winofka, that he took it at first for flakes of snow.

The caterpillars change to pupæ about the end of May, and in three weeks the butterfly makes its appearance; but in France there seem to be (as there are of many other insects) two broods, one in the spring, another in the autumn.

Mr. Haworth used to observe *P. Cratagi* at Chelsea, annually, some years since; and it occasionally is found in abundance at Coombe Wood. It has been taken in Norfolk, Suffolk, Kent, the New Forest and Monk's Wood near Cambridge, and Mr. Dale has captured it at Glanville's Wootton Dorset; and Enborne in Berkshire.



Painted by S. Carter July 1 1827

GONEPTERYX RHAMNI.

The Brimstone Butterfly.

Beau 120

ORDER Lepidoptera. FAM. Papilionidæ Lat., Leach.

Type of the Genus *Papilio Rhamni* Linn.: *Rhodinusa rhamni* -GONEPTERYX Leach., Sam.—*Colias* Fab., Lat.—*Pieris* Schr.—*Papilio* Linn., Haw.*Antennæ* inserted upon the crown of the head, rather short and robust, cylindric, clavate, the obconic club not compressed (fig. 1).*Labrum* and *Mandibles* attached to the nasus or clypeus.*Maxillæ* spiral, more than twice the length of the antennæ (3).*Labial Palpi* porrected obliquely (7*4), obtuse, producing long scales beneath which meet and cover the maxillæ (7, 4); 3-jointed, basal joint recurved, robust, 2nd robust subovate, 3rd small conical (4 a).

Head rather small with a long erect tuft of scales upon the forehead (7*).

Eyes ovate, not pubescent. Thorax large. Wings large angulated, inferior ones grooved on the abdominal margin to receive the body.

Feet alike in both sexes. Tarsi 5-jointed, basal joint long, 2nd and 3rd short of equal length, 4th very small, 5th longer (8, a fore leg).

Claws bifid. Pulvilli slender (8†).

Larvæ elongated naked, with 6 pectoral, 8 abdominal and 2 anal feet.

Pupæ short, robust, angular, thorax and underside very convex, beak sharp, attached by the tail and loosely girted round the middle.

RHAMNI Var.

Male: Antennæ and upper surface of palpi and tuft on head dull rose colour. Wings deep yellow, each having an orange spot towards the centre, those on the upper wings being the smallest: superior wings clouded, minutely dotted and streaked with orange, the nervures partaking of the same colour, inferior wings with a greenish tinge towards the base, less clouded and dotted with orange. Beneath pale sulphur with a very faint rosy tinge, the central spot of each wing pale shining brown, the edges darker, forming an ocellus, a row of rosy dots upon the external margins and another of brown dots parallel to them.*In the Cabinet of Mr. Haworth.*DR. LEACH, who first established the genus *Gonepteryx*, gave no other character to distinguish it from *Colias* than the angu-

lated wings: it may however be observed that the antennæ are not capitate but clavate, and the long tuft of scales below them as represented at figure 7*, is not a less important distinction.

Many species of the beautiful family to which our insect belongs live through the winter, and delight us with their vernal visits: and amongst the earliest of these heralds of spring is the Brimstone Butterfly, making its appearance in the neighbourhood of woods and even sporting in our gardens when the sun's rays first begin to cheer and animate all nature; and the eggs which are then deposited produce green caterpillars that feed upon the Buckthorn (*Rhamnus catharticus*), and again appear as butterflies in August.

Papilio Rhamni was described by Linnæus, and has been figured in *Donovan's British Insects* (vol. 5. plate 145.): the females are of a very pale yellow, and the males are of a fine sulphur colour, but not quite so dark perhaps as the extraordinary variety represented in our plate, which approaches so near to *G. Cleopatra* that it appears only to require the interstices to be filled up with the orange colour that variegates the upper wings to obtain the perfect character of the male of that species; which is the more remarkable, from *G. Cleopatra* never having been detected in this country; otherwise we should have been disposed to have referred it to that species. This beautiful variety was taken many years back at Peckham near London by Mr. Ingall, by whom it was presented to A. H. Haworth, Esq., in whose valuable collection it is now preserved, and to whose politeness we owe the opportunity of laying a figure of it before our readers.

The plant is *Melica uniflora* (Wood Melic-grass).



By Curtis sculp. Jan 1858

COLIAS HYALE.

The pale clouded-yellow Butterfly.

ORDER Lepidoptera. FAM. Papilionidæ *Lat., Leach.**Type of the Genus Papilio Hyale Linn. = Colias hyale.*COLIAS *Fab., Lat., Leach, Sam.*—*Pieris Schr.*—*Papilio Linn., Fab.,* *Haw., Hüb., Och.**Antennæ* inserted on the crown of the head rather short and robust, cylindric, terminated by a gradually formed club, subtruncate and not compressed (1).*Maxillæ* spiral, a little longer than the antennæ (3).*Labial Palpi* porrected obliquely, subconic, the terminal joint visible; clothed with long hairy scales beneath, which meet and conceal the maxillæ (4); triarticulate, 1st and 2nd joints of equal length, the former curved, the latter straight, slightly attenuated at the ends, the 3rd very small obovate (4a).

Head rather small regularly clothed with scales. Eyes ovate not pubescent (7 & 7*). Thorax large. Abdomen longer and more slender in the male than female. Wings large, anterior elongate-triangular, posterior subovate or subquadrate meeting beneath and grooved to receive the body; the central cell closed. Feet alike in both sexes. Tarsi 5-jointed, basal joint long. Claws bifid (8). Pulvilli very minute or none.

Obs. The dissections were made from *C. Edusa Fab.*

Larvæ elongated, cylindric, slightly pilose, with 6 pectoral, 8 abdominal and 2 anal feet.

Pupæ rather short and robust, attached by the tail and girted behind the thorax which is gibbous; head beaked.

HYALE *Linn. Faun. Suec. p. 272. n. 1040.*—*Fab.*—*Haw.*—*Och.*—*Palæno Esp.*—*Hüb.**Male*, sulphureous. Head, upper side of palpi and antennæ castaneous brown, the tips of the latter ochreous, the underside rosy. Thorax and abdomen grey, clothed with yellowish hair, rosy next the head. Superior wings with the costa rosy, grey at the base; a black spot in the disc; the posterior margin black, sinuated at the edge and attenuated to the posterior angle, having 4 or 5 sulphureous spots near the apex and one below. Inferior wings greyish next the body, with a large and small orange spot near the disc, a portion of the margin next the upper wings blackish, interrupted by 1 or 2 sulphureous spots. Underside of superior wings pale at the interior margin, orange at their tips, with 2 brown spots on the costa and 5 blackish spots near the margin, the middle of the black discoidal spot yellowish; inferior wings dull orange, with a rosy spot at the base, a large and small silvery spot in the disc margined with dull castaneous, and 7 spots of the same colour parallel with the margin.*Female* white with a tinge of sulphur, &c. as represented in the figures at the top and bottom of the plate, the latter showing the underside.*In the Author's and other Cabinets.*

ALTHOUGH no less than six species of *Colias* have been described as inhabitants of Britain, they may be reduced to two:

1. *C. Hyale* Linn.—Curtis Brit. Ent. pl. 242.

This rare insect is generally found near the coast, especially of Suffolk, Kent, and Sussex, from the beginning of August to the first week in September. The beautiful specimens figured (the central one being the male) were taken between Brighton and Lewes, and erroneously called *Europome*: they were kindly transmitted to me by my friend the Rev. C. S. Bird, who purchased them of Mr. Browne, the captor. I am also indebted to Mr. Leplastrier for the examination of five specimens taken by himself near Dover, one of which is a very dark and curious variety.

P. Europome was first described and figured by Esper, and since by Hübner, and is considered by the best Lepidopterists on the Continent to be synonymous with *P. Palæno* Linn. It is not a British insect, those described and even figured as such being the *P. Philodice* of Godart, (in the Encyclopédie Méthodique,) a North American species, of which there is no testimony of a single specimen having been taken in Britain, nor, it may be added, in Europe: the old examples in the cabinets of the late Mr. Francillon, and Mr. Swainson, and two in Mr. Plastead's, were no doubt placed there as representatives of *C. Hyale*, the males of which greatly resemble the females of *P. Philodice*; but the latter may be distinguished by the black margin of the superior wings being broad at the posterior angle, as in the following species.

2. *C. Edusa* Fab. Haw. Don. 7. 238. 2. fem.—*Hyale* Don. 2. 43. male.—*Helice* Hüb. Haw. var.

The *Coliæ* are remarkable in this country for their periodical appearance; it is said that *C. Edusa* visits us every three or five years: however this may be, it is certain that occasionally it is abundant in various parts of the kingdom, although for several years successively not a specimen will be seen.

Small varieties of *C. Edusa* have been described as the *P. Chrysothome* of Esper and Hübner, of which I have authentic specimens; and that it is a very different insect may be seen by comparing their figures with the British ones.

C. Helice is a yellow variety of the female of *C. Edusa*; and it is extraordinary that a corresponding one of the male should never have been discovered.

The caterpillar of *C. Hyale* in our plate is copied from Hübner; it feeds upon *Coronilla varia*, and that of *C. Edusa* upon *Cytisus austriacus*, neither of which are British plants: this latter larva will however, I believe, eat *Medicago lupulina* (pl. 6.), and probably other papilionaceous plants.



Pieris daphnidica

Pieris (PONTIA) DAPLIDICE.

Green chequered white, or Bath white, Butterfly.

ORDER Lepidoptera. FAM. Papilionidæ Lat., Leach.

Type of the Genus Papilio Daplidice Linn. = *Pieris daplidice* Linn.

PONTIA Fab., Leach. Pieris Schrank., Lat. Papilio Linn., Fab., Haw.

Antennæ composed of about 30 joints, with an abrupt, obconic, compressed club of 7 or 8 joints (f. 1. shows part of the antenna.)

Labrum attached to the clypeus. (2. a.)

Mandibles attached to the clypeus, remote, parallel, ciliated. (2. b.)

Maxillæ long and spiral (3.) : with a small palpus of two joints near the base.

Labium triangular, elongated (5.) : *Palpi* porrected obliquely, 3-jointed, covered with scales, the two first with long hairs also (4.) : first joint long, recurved from the base, cylindrical, second conical, as long or longer than the first, the third slender, linear, much shorter than the second in *P. Cardamines* and *Daplidice* (4. a.), and longer than the second in the other species.

Wings not very narrow or much elongated, posterior ones with a groove on the abdominal margin to receive the abdomen. Feet alike in both sexes. Tarsi 5-jointed, first joint very long. Claws unidentate or bifid.

Larvæ elongate, cylindrical, downy, sometimes tuberculated.

Pupæ elongate, angular, beaked, attached by the tail, girted round the middle.

DAPLIDICE Linn. Syst. Nat. 2. 760. 81. Fab. Ent. Syst. t. 3. pars 1. p. 191. n. 593. Haw. Lep. Brit. p. 10. n. 11.

Male nearly white. Superior wings above blackish at the apex, interrupted by large white spots, a blackish spot near the centre towards the costa, with the transverse nerve passing through it whitish : posterior wings variegated with griseous : superior wings beneath with the same spots, and a small one near the posterior angle green speckled with black : inferior wings beneath green speckled with black, having a row of white spots on the margin, an interrupted fascia parallel to the margin, and three other white spots towards the base. Abdomen black with griseous hairs. *Female* larger than the male, with an additional blackish spot near the posterior angle of the superior wings, a blackish margin with white spots, and a large black spot upon the inferior wings ; beneath similar to the male.

In the Cabinet of Mr. Stephens.

THE Genus *Pontia* contains five British species, which, with the exception of the one figured, are amongst the most com-

mon of our Butterflies, the caterpillars of many of them being the greatest pests amongst our vegetables, by feeding upon and destroying the different varieties of cabbages cultivated in our kitchen gardens.

As the Genus now stands, it may be divided into those with the wings rounded, *P. Brassicæ* L.; *Rapæ* L.; *Napi* L.;—the others having the wings variegated beneath, *P. Cardamines* L.; *Daplidice* L.: the palpi of the first division have the terminal joint longer than either of the other joints; whereas the terminal joint is shorter than the second in the two species of the second division, and *P. Cardamines* has two additional nerves extending to the costa of the superior wings. *P. Sinapis* I have ventured to remove from the Genus *Pontia*, the form of the wings as well as the total disagreement of the nerves rendering such a step necessary; and I am borne out by the extraordinary difference in the palpi, which are short, flat, the first joint being very large, conic, second small, quadrate, the third very small, nearly globose. Although I have availed myself of the inimitable and elegant dissections of Mons. Savigny to illustrate the subject, it has not been done without the most careful comparison of them with nature; and I shall take advantage of this opportunity of correcting an error in his first plate, the figures relating to *P. Daplidice* being numbered 2. instead of 3. which error is carried through the plate.

Pieris Daplidice, like many other insects, seems to be periodical in its appearance. It was taken in the days of Ray, by Vernon near Cambridge; by Petiver, near Hampstead: Lewin also notices it as British. By its trivial name we may infer it has been taken near Bath; a faded specimen was taken in June 1802, in Whitewood near Gamlingay, Cambridgeshire, by the late Dr. Abbott; and another (a female), upon the heights near Dover Castle, August 14, 1818, by J. F. Stephens, Esq. to whom I have to acknowledge my obligations for the loan of the specimen figured, and also for the handsome manner in which he has in this as upon all other occasions rendered me every assistance in the progress of this volume.

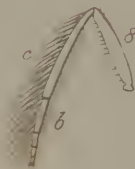
Godart in the *Encyclopédie Méthodique* informs us that "*P. Daplidice* is very common in Europe. It inhabits woods, and meadows particularly: it first appears in April and May, and afterwards in August. The caterpillar feeds upon many species of cabbage, upon *Reseda lutea*, and according to Hübner upon a wild Mustard, the seeds of which it eats. Its body is of an obscure blue embroidered with yellow and spotted with black; its head is of a light green with yellow spots and black dots. The chrysalis is greenish or ash-coloured, according to the age."

Reseda lutea (Base Rocket, or Wild Mignonette) is figured with the insect.



VIII 33

Lonicera axillaris
4 March 1822



John J. Curtis Mar 4 1822

Coccyzus HIPPARCHIA HERO.

ORDER Lepidoptera. FAM. Papilionidæ Lat., Leach.

Type of the Genus Papilio Janira Linn.

HIPPARCHIA Fab., Och., Leach.—Argus Scop.—Maniola Sch.—Oreades Hüb.—Satyrus Lat., Godart.—Nymphalis Lat.—Papilio Linn., Fab., Haw. Antennæ inserted on the crown of the head, composed of numerous joints, clavate, the club elongated, compressed, the apex naked (1). Maxillæ spiral, as long as the antennæ (3).

Labial Palpi porrected obliquely, parallel, not touching, very much compressed, slender, thickly clothed with scales which are very long and hairy on the under side (4); triarticulate, basal joint short, 2d very long rather robust, slightly attenuated in some, in others subclavate, 3d about half the length of the 2d, slender, filiform (4 a).

Head small. Eyes sometimes pubescent; (7, the head in profile). Wings, superior somewhat ovate, inferior orbicular, sometimes inclining to a triangle, the posterior margin frequently indented, abdominal margin excavated to receive the body, the middle cell completely closed. Legs alike in both sexes; anterior pair very small and hairy. Tarsi 4-jointed (8 b): middle and posterior pairs with the tarsi 5-jointed, terminated by long claws. Pulvilli large forming a dilated central lobe, with a slender hairy process on each side (8†). Eggs globose. Larvæ downy, head globose, apex of abdomen mucronated; gramminivorous. Pupæ suspended by the tail, generally short and obtuse.

HERO Linn., &c.—Brown with a fulvous cast. Antennæ black annulated with white. Superior wings palest at the costa, an orange stripe close to the posterior margin, near to which are 2 small eyes of the same colour with brown pupils; inferior wings with an orange stripe at the posterior margin, close to which are 4 large orange eyes with blackish irides. Beneath; superior wings orange at the posterior margin, parallel to which is a silvery line, and 2 small ocelli with black irides and white pupils; inferior wings with a broad orange margin inclosing 5 large and 2 smaller ocelli, with black irides and white shining pupils; a silvery stripe near and parallel to the posterior margin, and a whitish irregularly sinuated wave nearly across the middle.

In the Author's Cabinet.

THE natural situation of this extensive genus appears to be between Pontia and Melitæa, the habit of the caterpillars and the imago being similar to the former, as well as a few of the chrysalides, whilst most of the pupæ and the short anterior feet of the flies greatly resemble those of the latter genus.

The following arrangement and account of the British species will, we trust, be found useful, and more satisfactory than any that has hitherto appeared.

A. Eyes pubescent.

1. H. Megæra Linn., Haw.—Sepp. 2. tab. 2 & 3.—Don. 8. 279. mas.—April and July: Woods, Fields, Lanes, and Road-sides.

2. H. Ægeria Linn., Haw.—Sepp. 1. tab. 6.—Don. 14. 498.—From March to June: Woods, grassy banks, Fields, and Lanes.

B. Eyes naked.

3. *H. Galathea* Linn., *Haw.*—*Don.* 8. 258. *mas.*—June and July: Moist Woods, Fields, and grassy sides of roads; Harrow, Cambridgeshire; Norfolk, Scotland, &c.

4. *H. Semele* Linn., *Haw.*—*Don.* 8. 259. *fem.*—July: arid Heaths, Commons, and rocky wastes, both inland and on the coast.

5. *H. Janira* Linn. *mas.*—*Jurtina* Linn. *fem.*—*Sepp.* 1. t. 5.—*Don.* 9. 320.—July: Meadows, and Lanes abounding with Brambles.

6. *H. Tithonus* Linn., *Lew. Sepp.* 1. t. 3.—*Pilosellæ* Fab., *Haw.*—*Don.* 12. 405.—June and July: borders of Woods, Fields, Meadows, and grassy lanes.

7. *H. Ligea* Linn.—*Sow. Brit. Mis. tab.* 2.—*Steph. pl.* 6.—*Alexis Esp.*—*var. Philomela Esp.*—August: Isle of Arran. Sir P. Walker and Mr. MacLeay. In France it appears towards the middle of summer, in Meadows and open spaces in Woods; it is also found in Sweden.

8. *H. Blandina* Fab.—*Don.* 12. 426.—*Æthiops Esp. Medea Hüb., Och.*—End of July: taken by Mr. Dale and myself near Brodick Castle, Isle of Arran, the males flying over Heath and Fern, the females amongst rushes and heath in springy places: also at Castle Eden Dean, Durham.

9. *H. Cassiope* Fab.—*Steph. pl.* 8. f. 1, 2. *Mnemon Ent. Trans. p.* 3. *Melampus Esp. pl.* 78. *cont.* 28.

The males in forward seasons have appeared as early as the 11th of June; but last year, when Mr. Dale and myself visited Ambleside, they were later, the first being taken the 18th of June, and they did not become plentiful till the 25th. They are found amongst the coarse grass that covers considerable spaces abounding with springs on the sides of mountains; they only fly when the sun shines, and their flight is neither swift nor continued, for they frequently alight amongst the grass, and falling down to the roots, their sombre colour perfectly conceals them. The females are later, and have been taken even in August. We found the males on Red Skrees, a mountain near Ambleside; and Mr. Marshall took them at Gable-Hill and Styehed, between Wastwater and Borrowdale.

10. *H. Hyperanthus* Linn., *Haw.*—*Sepp. tab.* 4.—*Don.* 8. 271.—*Polymeda Hüb., Scop.*—End of June: damp grassy Woods, Lanes, and Fields.

11. *H. Hero* Linn., *Och., Esp., Godart., Nob.*—*Sabæus* Fab.—A female was taken by Mr. Plastead near Wythyham on the borders of Ashdown Forest, Sussex. It is common in Sweden, and is found in Forests to the North of Paris, and also in mountainous and forest districts in Silesia, the end of May, June, and July.

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Melica coccyllia

Coccyzus

12. (H.) *Arcanius* Linn. *Fab. Esp. tab.* 21. *f.* 4.—*Schæf. Icon.* 127. *f.* 4 & 5.—*Hüb. t.* 51. *f.* 240–242.—*Goda.* 1. *pl.* 26. *f.* 3.—*Curtis Brit. Ent. pl.* 205*.

Male? Tawny. Head, thorax and abdomen brown; club of antennæ ferruginous on the inside. Superior wings with the costa inclining to brown and the posterior margin with a fimbria of the same colour, upon which is a small obscure ocellus near the apex. Inferior wings brown, palest across the middle, with a narrow orange stripe at the anal angle, three or four ocelli scarcely visible. Underside of superior wings with the costa and posterior margin slightly fuscous, with a short pale ochreous transverse stripe towards the apex, where there is an ocellus (and sometimes a very minute one also) with a black iris: inferior wings pale ochreous, orange brown at the base, terminating in a sinuated margin beyond the middle, having an ocellus with a black iris and silver pupil at the superior extremity; the posterior margin bright tawny, with two large and two (sometimes three) small ocelli like the former one, and a silver line nearer the cilia.

The other sex has the disc of the inferior wings tawny, and the ocelli are not visible on the upper side.

Being in possession of the only indigenous specimen of this insect, and having obtained a drawing of the caterpillar and chrysalis from Hübner, I have been tempted to give an engraving of them, to accompany the remaining account of the genus *Hipparchia*. A desire to make this work complete, as far as I am able, has induced me in this single instance to deviate from my plan; but such a step will not be again necessary.

The specimen figured (which by the form of the body I consider a male) was captured by Mr. Plastead it is understood, on the borders of Ashdown Forest, and is now in my cabinet. This species appears in abundance on the Continent, at the same periods and in the same situations as *H. Hero*^a. The caterpillar feeds upon *Melica ciliata*, of which genus there are three species in Britain, one of which has been already figured in plate 173, and another accompanies the present subject.

^a The localities and times of appearance on the Continent of *H. Ligea*, *Hero*, and *Arcanius*, are here recorded, hoping that the information may lead to the discovery of more indigenous specimens.

I shall here remark that Professor Schummel found in June 1811, a hybrid between the two last insects, having the underside of *Hero* and the upper of *Arcanius*; and when Mr. Dale and myself were at Manchester, Mr. R. Wood informed us that he had taken three males of *Janira* united to *Hyperanthus*, two of which he at that time possessed. He has been kind enough to send me this year male and female varieties of *H. Tithonus*, which he justly observes appear to be between that species and *H. Ligea*; they have two additional blind ocelli on the superior, and one has two, the other three, with white pupils, on the inferior wings.

13. *H. Davus* *Fab.*, *Och.*, *Haw.*—*Hero* *Don.* 6. 186.—*var.* *Philoxenus* *Esp.*—*Tullia* *Hüb.*—This variable insect appears in June and July, at Trafford and White Moss near Manchester, on heathy and swampy wastes, and even in plantations. I am indebted to Mr. R. Wood for a fine series of this insect, and he very handsomely showed me its habitats.

14. *H. Polydama* *Haw. Lep. Brit.* p. 16. n. 17.—This insect appears to be a variety of the last, in company with which it was taken near Manchester. It has also been found in June in marshy places, Yorkshire, and on mountains between Bala and Festiniog, North Wales, and at Derwent Water, Cumberland.

15. *H. Typhon* *Haw.* not of *Esper.* nor *Villars.*—*Davus* *Goda.* v. 2. pl. 21. f. 1 & 2.—*Iphis* *Steph.* but not of *Och.*,^a *Hüb.*, nor *Goda.*—This insect is said to have been taken in June at Beverley, and near Cottingham, Yorkshire; the middle of July Mr. Dale and myself found it about rushy and swampy places near Schechallion, Killin, and in the Isle of Arran: and my friend Mr. C. Lyell has met with it near Kinnordy, and Mr. Marshall presented me with specimens taken by himself last year in Cumberland.

16. *H. Pamphilus* *Linn.*—*Haw.*, *Lew. pl.* 23. f. 3. 4.—*Esp. Goda.*—*Nephele* *Hüb.*, *Bork.*—May, June and September, grassy heaths and commons.

The plant accompanying *H. Hero* is *Convolvulus arvensis* (Small Bindweed); that figured with *H. Arcanius* is *Melica cærulea* (Purple Melic-grass), communicated by Mr. J. Bennett.

*Fig. 7. pl. 205** shows the underside of the head of *H. Janira*.

^a *Iphis* *Och.* v. 1. part 1. p. 310. n. 69.—*Hüb.* tab. 53. f. 249—251.—*Hero* *Fab.*—*Tiphon* *Esp.* 1. tab. 35. f. 3. 4.—*Vill.*



cf. *Bombus* I p. 11 fig 2

VANESSA ANTIOPE.

The Camberwell Beauty.

ORDER Lepidoptera. FAM. Papilionidæ *Lat., Leach.*

Type of the Genus Papilio Atalanta Linn.

VANESSA *Fab., Lat., Leach.* Papilio *Linn., Haw.*

Antennæ inserted on the crown of the head, between the eyes, composed of about 40 joints covered with scales above, terminated by an ovoid, abrupt, short club, denuded at the apex (fig. 1. the club magnified).

Labrum attached to the clypeus, minute, triangular, elongate.

Mandibles attached to the clypeus, remote, parallel, ciliated.

Maxillæ long and spiral, with a small palpus of 2 joints near the base.

Labium triangular. *Palpi* contiguous, porrected obliquely, somewhat resembling a beak, 3-jointed, covered with scales and hair (4) : basal joint short, curved upward, 2nd long attenuated, 3rd as long as the 1st attenuated, very rigid at the apex (4 a).

Eyes densely pubescent, minutely reticulated (7, the head viewed beneath). Wings somewhat triangular and produced at the posterior margin, a groove on the abdominal margin to receive the body, more or less sinuated at the abdominal angle. Feet alike in both sexes; the anterior pair not formed for walking, very hairy, like a tippet (8). *Tibiæ* dilated towards their apex (8 b). Tarsus formed of a single compressed ovoid joint (c). The 4 posterior tarsi 5-jointed, terminated by Claws and Pulvilli with membranaceous pubescent bifid appendages at their base (8†).

Larvæ with each segment excepting the 1st armed with a whorl of spines. Pupæ suspended by the tail, angular, head bituberculated.

ANTIOPE *Nob.* Antiopa *Linn. Syst. Nat.* 2. 776. 165. *Haw. Lep. Brit.* p. 27. n. 32.

Dull, reddish purple. Wings with a margin of very pale straw-colour, costa and 2 spots adjoining towards the apex of the same colour, the former variegated with black, an indented black band with 7 or 8 dull azure blue spots on each wing, next to the pale margin. Beneath dark brown striped with black, margins pale straw-colour.

In the Author's and other Cabinets.

THE genus *Vanessa* may be distinguished by its palpi and antennæ from *Argynnis* and *Melitæa*, as well as from *Apatura* and *Limenitis*: but the most decided differences are to be

found in the larvæ, which, although spined in common with the two former genera, have the neck or first segment free from spines, which is not the case in the *Fritillariæ*. The remarkable anterior feet, which are more beautifully formed in this genus than in any other, are not uncommon amongst the *Papilionidæ*; neither are the appendages to the posterior ones confined to this group; these appendages, which appear to belong to the pulvilli, (and probably supply the deficiency or want of claws in the anterior pair,) have erroneously been described by De Geer and other authors as double nails.

Our genus may be divided, 1st, into those with irregularly lobed wings, caterpillars gregarious with bituberculate heads.

1. *Vanessa C. album* Linn., *Don. Brit. Ins. v. 6. pl. 199.*

2ndly, with angulated wings, caterpillars gregarious.

2. *Urticæ* Linn., *Don. Brit. Ins. v. 2. pl. 55.*

3. *Polychloros* Linn., *Don. Brit. Ins. v. 8. pl. 278.*

4. *Antiopa* Linn., *Don. Brit. Ins. v. 3. pl. 89.*

5. *Io* Linn., *Don. Brit. Ins. v. 6. pl. 206.*

3rdly, with the inferior wings rounded and indented, caterpillars solitary.

6. *Atalanta* Linn., *Don. Brit. Ins. v. 8. pl. 260.*

7. *Cardui* Linn., *Don. Brit. Ins. v. 9. pl. 292.*

The fine species figured, which belongs to the most superb genus of British *Papilionidæ*, is rendered rare and remarkable in this country by its periodical appearance, the cause of which has hitherto never been ascertained: the most probable conjecture is (as Mr. Haworth has observed) that "their eggs in this climate, like the seeds of some vegetables, may occasionally lie dormant for several seasons, and not hatch, until some extraordinary but undiscovered coincidences awake them into active life." Until four or five years since *V. Antiopæ* had not been seen for nearly forty years, when it was exceedingly abundant in different parts of the kingdom. In the year 1819 a few were taken in Suffolk, and Mr. Samouelle captured one the following spring that had lived through the winter, since which period it has not been seen. It has received its English name from having been first observed at Camberwell, whither it might have been attracted by willows, upon which the larvæ feed, and are full grown the beginning of July; the butterfly is found the beginning of August; it frequents woods, and is strong and rapid in flight.

V. Atalanta in its perfect state is sometimes very destructive to fruit, particularly cherries, extracting the juice from those that are ripe, probably taking advantage of previous injuries occasioned by birds, wasps and flies.

The caterpillar, which is copied from Hübner, is drawn upon a piece of *Salix Forbyana* (Basket Osier).



cf. *Bom. E. P.* 1879

APATURA IRIS.

The purple-Emperor or Highflyer.

ORDER Lepidoptera. FAM. Papilionidæ Lat., Lea.

Type of the Genus, Papilio Iris Linn.

APATURA Fab., Leach, Sam., Hors.—Nymphalis Lat.—Papilio Linn. & c.

Antennæ inserted on the crown of the head between the eyes, composed of numerous joints, long and slightly curved, terminated by a broad concave elongate-ovate club (6).

Maxillæ long and spiral.

Palpi porrected obliquely, pointed, meeting and forming a beak considerably beyond the head, thickly clothed with short scales, long and bristly above beneath and at the base (4); triarticulate, basal joint short, 2d very long, slender and curved, 3d not longer than the basal joint, elongate-conic (4 a).

Eyes oval and naked: (7, the head viewed beneath). Thorax robust, subovate. Wings with very strong nervures, superior elongate, trigonate, with the posterior margin slightly concave but entire; inferior slightly scalloped, the discoidal cell not closed; a groove in the abdominal margin to receive the body, with a deep notch inside the posterior angle. Abdomen short, and rather stout. Feet, anterior pair not formed for walking, small and imperfect in both sexes, the thigh and tibia short and slender (8, a, b), tarsus very pilose (c), 4?-jointed, basal joint long, 2d and 3d short, 4th minute. Claws none (*). 4 posterior legs long, tarsi 5-jointed, terminated by Claws and Pulvilli with membranous pubescent, bifid appendages at the base. Larvæ with the head furcate, the body thickest in the middle and attenuated to the apex which is bifid.

Pupæ broad keeled and compressed, head-case bifid; suspended by the tail which is furnished with many minute hooks. (Introduction to Ent. Pl. XVI. f. 10.)

IRIS Linn. S. N. 1. pars 2. p. 775. n. 161. Curtis's Guide, Gen. 772.

Male, blackish with a splendid bluish purple lustre; superior wings with a large white spot in the centre and 2 below it, 3 towards the costa, 2 towards the apex smaller, and 2 near the posterior margin; cilia with a small space near the apex and the posterior angle white: inferior wings with a white fascia across the centre produced in the middle of the outer margin, posterior angle orange, bearing 2 black spots and higher up an ocellus with an orange iris; cilia white spotted with black. Underside of superior wings orange and ferruginous, with several white and black spots, a portion of the posterior margin lilac, near which is a black spot with a lilac centre, on an orange ground, bearing 2 white spots: inferior wings lilac and ash color, ferruginous in the middle, across which is a white abbreviated band, attenuated to the lower extremity and produced externally near the middle, anal angle red with a long black mark, a black ocellus above with a lilac pupil and orange iris.

Female brown, and generally larger than the male.

In the Author's and other Cabinets.

THE caterpillar I have copied from Hübner; it feeds upon the broad-leaved Sallow, and is found the end of May; the butterfly inhabits woods and forests.

As I have seen only one specimen of this beautiful *Papilio* alive, I shall transcribe Mr. Haworth's observations upon the species.

“In the month of July the purple Emperor makes his appearance in the winged state, and invariably fixes his throne upon the summit of a lofty oak, from the utmost sprigs of which, on sunny days, he performs his aerial excursions; and in these, ascends to a much greater elevation than any other insect I have ever seen, sometimes mounting higher than the eye can follow; especially if he happens to quarrel with *another Emperor*, the monarch of some neighbouring oak: they never meet without a battle, flying upwards all the while, and combating with each other as much as possible; after which they will frequently return again to the identical sprigs from whence they ascended. The wings of this fine species are of a stronger texture than those of any other in Britain, and more calculated for that gay and powerful flight which is so much admired by Entomologists. The purple Emperor commences his aerial movements from 10 to 12 o'clock in the morning, but does not perform his loftiest flights till noon, decreasing them after this hour, until he quite ceases to fly, about 4 in the afternoon: thus emulating the motions of that source of all his strength, the sun. The females, like those of many other species, are very rarely seen on the wing: the reason of which is both interesting and but little known. It is their being destitute of a certain *spiral socket*, which the males possess near the base of the main tendon of their upper wings; which *socket* receives and works a strong elastic *spring* arising from the base of the under wings; thereby enabling them to perform a stronger, longer, and more easy flight than it is possible for the females to do.

“The males usually fly very high, and are only to be taken by a bag-net fixed to the end of a rod twenty or thirty feet long. There have been instances, though very rare, of their settling on the ground near puddles of water, and being taken there. When the purple Emperor is within reach, no fly is more easily taken than it; for he is so very bold and fearless, that he will not move from his settling-place until you quite push him off: you may even tip the ends of his wings, and be suffered to strike again.”—*Lep. Brit. p. 19.*



Phalaena ...

Genus ...

LIMENITIS CAMILLA.

The White Admiral.

ORDER Lepidoptera. FAM. Papilionidæ *Lat., Leach.*

Type of the Genus Papilio Camilla Linn.

LIMENITIS *Fab., Leach.*—*Nymphalis Lat.*—*Papilio Linn., Fab., Haw.*

Antennæ inserted on the crown of the head between the eyes cylindrical, composed of numerous joints covered with close scales above, terminated by a slender elongated obconic club, denuded at the apex (fig. 1).

Labrum attached to the clypeus minute triangular.

Mandibles attached to the clypeus, remote, parallel, ciliated.

Maxillæ spiral, long and slender, with a minute palpus at the base of each.

Palpi parallel, not contiguous, porrected obliquely, as long as the head, 3-jointed, covered with scales and hair (4,4), basal joint oval, 2nd long, cylindrical, slightly curved, 3rd elongate ovate, slightly mucronate (4a).

Eyes pubescent, minutely reticulated (7, the head viewed beneath).

Wings somewhat triangular, not much longer than broad, rounded, entire, a groove on the abdominal margin to receive the body. Feet alike in both sexes, the anterior pair very small and slender, the tibia covered with close hairy scales, the tarsus formed of 1 joint (8c) covered with close long hair extending beyond the apex, which is terminated by a little claw (8). 4 posterior legs long, tarsi 5-jointed, terminated by Claws and Pulvilli, with membranous pubescent, bifid appendages at the base as in *Venessa*.

Larvæ long cylindrical with several pair of obtuse hairy spines on the back and fascicles of hair down the sides.

Pupæ suspended, head case beaked, gibbose on the underside.

CAMILLA *Linn. Syst. Nat. 2. 781. 187.*—*Haw. Lep. Brit. p. 29. n. 34.*

Above dull black, variegated with darker spots; superior wings with 5 large and 5 or 6 small white spots, inferior wings with an oblique white fascia, attenuated towards the anal angle, where there are 2 dull red ocelli, cilia spotted alternately black and white. Beneath ferruginous yellow: superior wings with several white and black spots: inferior pale blue at the base and abdominal margin, a broad white fascia across the middle, a few spots near the margin whitish, and many more black.

In the Author's and other Cabinets.

LIMENITIS Camilla is the only species of the genus that has been found in this island, although 4 others are inhabitants of Europe: it is celebrated for its graceful flight, and was formerly tolerably abundant in the neighbourhood of London during the months of June and July. Mr. Samouelle has seen it in Bedstile Wood near Finchley, and at Birch Wood in Kent: we have heard of its being taken not unfrequently at Coombe Wood; and a year or two since the Rev. R. Sheppard captured a considerable number in the vicinity of Ipswich. The egg is said to be unknown; the caterpillar we have copied from Hübner, to make our plate more complete, and hope that we have not erred in so doing; but it is possible that it may be the larva of *L. Sibilla*, for Ochseneheimer and all the German writers following Fabricius, still persist in transposing the names of *Limenitis Sibilla* and *Camilla*, although Linneus's definition "*angulo ani rubro*" identifies the latter species most completely, and proves satisfactorily that our insect is his *Camilla*. We are aware that his reference to Roesel's figure is incorrect; but surely his description is to be taken in preference to his illustration, which might have been left to a less experienced hand.

The caterpillars of both insects feed upon the different species of *Lonicera*; that introduced in the plate is *L. Caprifolium* (Pale Perfoliate Honeysuckle).



Drawn by J. G. Rehn, London, Nov. 1881

ARGYNNIS AGLAIA.

The dark green Fritillary.

ORDER Lepidoptera. FAM. Papilionidæ Lat., Leach.

Type of the Genus, Papilio Aglaia Linn.

ARGYNNIS Fab., Lat., Leach, Sam., Hors.—Papilio Linn., Don., Haw.,
Antennæ inserted on the crown of the head, between the eyes,
 rather long and slender, composed of about 40 joints, terminated
 by a very abrupt and large spoon-shaped club, with 3 or 4 ridges
 on the underside (1).

Maxillæ long and spiral.

Labial Palpi contiguous, divaricating at the apex, porrected ob-
 liquely and forming in profile a short beak, not extending much
 beyond the head, 3-jointed, clothed with scales, hairy above and
 below, produced at the inferior apex of the 2nd joint like a pencil,
 3rd joint very distinct (4); basal joint rather short and curved,
 2nd very long dilated towards the extremity, 3rd very slender,
 elongate-conic (4 a).

Eyes large and naked. Head *very broad and obtuse* (7). Thorax *ro-*
bust. Wings *very ample*; superior *subtrigonal*, the anterior margin
very much arched; inferior *suborbicular*, generally extending con-
 siderably beyond the abdomen. Feet *alike in both sexes*; anterior
imperfect, short, slender and hairy, the tarsi being formed of one
joint not so long as the tibia and destitute of claws (8). Four posterior
 tarsi 5-jointed, terminated by Claws and Pulvilli with membranous
 pubescent bifid appendages at the base as in *Vanessa*.

*Eggs subconical, many-ridged, the vertex depressed.**Larvæ long cylindric, producing long spines, with 2 close to the head.**Pupæ suspended, head case and underside slightly tuberculated (A).*AGLAIA var. δ .

Male. Wings smaller, and body longer than in the type. Fer-
 ruginous-fuscous. Superior wings black, excepting the costa
 and a portion of the base; nervures slightly orange, and between
 them at the posterior margin is a row of large faintly dotted
 orange spots; a curved mark towards the base, a spot near the
 middle, and a streak approaching the apex deep orange. Cilia
 straw-colour maculated with fuscous. Inferior wings black at
 the base (excepting a large hooked character) and margined with
 black, leaving a band, on which are 5 black spots; the fimbria
 bears a double chain of ferruginous spots: the cilia straw-colour.
Underside: superior wings fuscous-ferruginous, tessellated with
 black spots, and markings; costa and a large portion towards
 the apex green, with 3 obscure silver dots; posterior margin
 ochreous, the basal curved mark and subcentral triangular one
 orange, margined with intense black. Inferior wings pea-green-
 freckled with black, the nervures ochreous; 7 pearly shining
 basal spots, with an irregular line of 7 blueish-silvery ones across
 the middle and 7 subblunular marks of the same appearance,
 along the margin which is ochreous.

In the Author's Cabinet.

THE handsome and remarkable variety of *Papilio Aglaia* represented in the plate, is well deserving the first place in a new volume, especially as it is a great rarity and does not appear to be figured in any other work. Two specimens (one of which I purchased) were taken by Mr. John Seaman in the parish of Nacton, near Ipswich, the 7th of July 1827. For an intermediate variety which was captured at Dover, I am indebted to Mr. W. Christy: it is singular that these specimens vary from the type no less in form than in colour, which is not the case I believe with *A. Caroletta*. The caterpillar and chrysalis are copied from Hübner.

The genus *Argynnis* is at once distinguished from *Melitæa* by its very ample wings, broad head and large eyes, and contains the following British species.

1. *A. Paphia* Linn.—*Don. Brit. Ins. v. 7. pl. 247, male.*

The end of May and beginning of July, borders of woods and in meadows, on brambles and thistles.—The caterpillar feeds on the dog's violet, raspberry and nettle.

2. *A. Aglaia* Linn.—*Don. 9. 302, male—var. β. Charlotta Sowerby Brit. Mis. tab. 11.—Caroletta Jerm.—var. δ Curtis Brit. Ent. pl. 290.*

July and August, woods, meadows, heaths and downs, upon brambles and thistles. The *A. Charlotta* was first taken the beginning of July in Bedfordshire, by Dr. Abbott.—The caterpillar feeds on the dog's violet.

3. *A. Adippe* Linn.?—*Esper.—Don. 13. 448.*

End of June and July. Heaths and borders of woods.—The caterpillar feeds on the sweet violet and the heart's-ease.

4. *A. Niobe* Linn.—*Godart v. 2. pl. 7. f. 3, 4, 5.*

Godart thinks this is the *P. Adippe* of Linnæus; and the same opinion might lead Stewart to record it as a British insect. Dr. Abbott's English collection contained a specimen, which Mr. Dale now possesses; and as it is found in Sweden and the South of France, there is nothing unreasonable in believing that it may occasionally make its appearance in this Island.—The caterpillar feeds on the violet and plantain.

5. *A. Lathonia* Linn.—*Don. 3. 73.—Sepp. v. 2. pl. 2.*

May: Gamlingay Wood, Cambridgeshire. Aug.: Halvergate, Norfolk; Battersea-fields; Castle Meadow and Shakspeare Cliff, Dover. Sept.: Birchwood, Kent; Hertford and Colchester.—This papilio is fond of the dandelion; but the caterpillar feeds on heart's-ease, sainfoin and borage. In England it is a rare insect, and is sometimes not seen for many successive seasons.

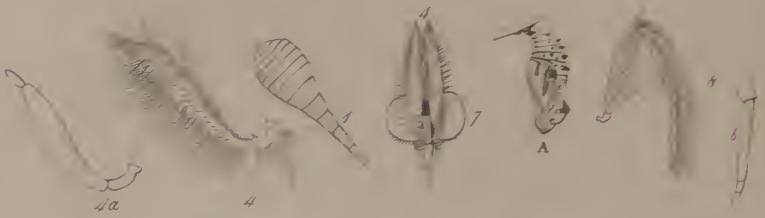


Plate by Charles Leach, 1792

MELITÆA SELENE.

The small pearl-bordered Fritillary.

ORDER Lepidoptera. FAM. Papilionidæ.

*Type of the Genus, Papilio Euphrosyne Linn.*MELITÆA *Fab., Sam., Hors., Curt.*—Argynnis *Lat., Och.*—*Papilio Linn., Haw.**Antennæ* inserted on the crown of the head, close to the eyes, rather long and slender, composed of about 35 joints and terminated by an abrupt spoon-shaped club (1).*Maxilla* spiral, nearly as long as the antennæ.*Labial Palpi* approximating, porrected obliquely and forming in profile a beak much longer than the head, lanceolate, triarticulate, thickly clothed with scales and hairs, apical joint indistinct (4); basal joint short and curved, 2nd very long stout and ventricose, 3rd much smaller than the 1st elongate-ovate (4 a).*Eyes* rather large and naked. Head *transverse and obtuse* (7). Thorax *ovate*. Wings rather narrow, superior somewhat elongate-trigonate, inferior suborbicular, extending beyond the abdomen. Feet similar in the sexes; anterior imperfect, short slender and hairy (8); the tarsus shorter than the tibia, attenuated, composed of 4 or 5 joints, the basal one being long the apical one pointed (b); intermediate and posterior tibiæ spurred. Tarsi 5-jointed terminated by Claws and Pulvilli. Eggs unknown.*Larvæ* pubescent, with rows of thick spines and 2 long ones close to the head.*Pupæ* suspended by the tail, head case and back tuberculated (A).SELENE *Fab. Ent. Syst. 3. 147.*—*Curt. Guide, Gen. 775. 2.*—*Silene Haw. 34. 41.*Bright fulvous. Antennæ black spotted with white, underside and tips orange. Wings with the base and nervures black: cilia spotted alternately with pale ochre and black: superior wings with 11 large black spots on each, extending beyond the middle; towards the posterior margin is a row of 6 black spots, the margin has a black indented fimbria bearing 8 fulvous spots. Inferior wings similarly marked. *Underside*, superior wings pale fulvous, the costa and apex straw-colour, the latter with a large ferruginous patch, the black spots of the upper side appear beneath, excepting at the posterior margin which is more or less straw-coloured, with 6 black V-shaped marks: inferior wings bright ferruginous variegated with pale yellow; an irregular yellow fascia at the base forming 4 spots, 2 or 3 of them silvery and margined with black; across the centre is a curved and sinuated yellow fascia margined with black, bearing 3 silvery spots, leaving a ferruginous fascia with a large round black spot in the centre, sometimes freckled with ferruginous and grey; beyond the middle are 3 large silvery marks and further on a line of irregular black spots, the posterior margin has 7 silvery triangular marks, the internal edges forming black V's.*In the Author's and other Cabinets.*

THIS pretty genus is distinguished from *Argynnis* (pl. 290.) by its more slender form, less ample wings and longer palpi, the terminal joint of which is shorter and more robust. The following are British species.

1. *M. Euphrosyne* L.—*Don.* 11. 312.—*Thalia Ent. Trans.* p. 333.—*Ste.* pl. 4. f. 3. This probably is a variety; and the *P. Thalia* of *Hübner*, 11. f. 57 and 58. is a similar variety of *M. Selene*.

This is a common species on heaths and in woods round London; in Norfolk, the New Forest, &c. Mr. Dale has found it from the 6th of May to the 27th of June. Lewin states that it appeared as early as the middle of April. It is said there is a second brood towards autumn in some places.

The Rev. C. S. Bird has a variety nearly white and rather transparent, which he took in May, and Mr. Haworth has some very pale varieties taken in September. In the British Museum there is a specimen larger, with the base of the superior wings entirely black.

2. *M. Selene* Fab.—*Curt. Brit. Ent. pl.* 386.—*Euphrasia* Lew.

Common in woods, on heaths and waste grounds. The beginning of last June it was in abundance flying amongst fern in the Forest, near Lyndhurst. Mr. Dale has found it from the 29th of May to the 10th of July, when it was much worn. Lewin took it as early as the end of May; and it is stated that a second brood has been observed in August or September. The caterpillar and chrysalis are copied from *Hübner*.

3. *M. Cinxia* L.—*Don.* 7. 242. 1.—*Delia* Hüb.—*Pilosellæ* Esp.

Rare in meadows on the borders of woods, from the middle of June to the beginning of July. Tottenham Wood, Wilkes; Lincolnshire, Ray and Petiver; Yorkshire, Dulwich, Birch Wood, and near Dartford. Near Dover, Mr. Leplastrier; Ryde, Isle of Wight, Mr. Sparshall; near the Sandrock Hotel and Undercliff at the back of the island, Mr. Newman and Mr. Waring.

4. *M. Artemis* F.—*Don.* 7. 242. 1.—*Materna* Esp.

Swampy places on heaths and sides of mountains, near Ambleside, the middle of June. Mr. Dale has taken it from the 22nd of May to the beginning of July. At Enborne he found two fine varieties, one of which is in the British Museum. It has been captured in Monk's Wood; Beachamwell, Norfolk; Eriswall, Mildenhall and near Beccles, Suffolk; near Brighton, Clapham Park, Bedfordshire; at Glanville's Wooton, and Dartmoor.

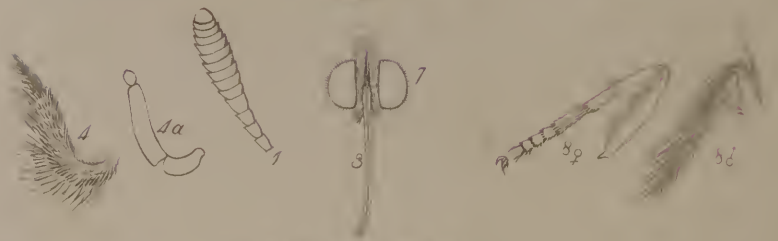
Obs.—The larvæ of *M. Cinxia* and *Artemis* pass the winter in a silken web, and change to pupæ the end of April.

5. *M. Athalia* Esp. *Och. Goda.*—*Dictynna* Lew. pl. 14. f. 5 & 6.—*Haw. Maturna* F.—*Hüb.* 4. 17. & 18.—*Pyronia* Hüb. pl. 114. f. 585.—588. var.—*Eos* Haw. 35. 43.—*Ste.* pl. 4. f. 1. & 2. This beautiful variety was taken by Mr. J. Howard at Peckham, in June. There is a fine variety in the British Museum, and Mr. Hatchet has another.

M. Athalia is found on heaths, marshes, &c. the end of May; in Coombe Wood; Hartley Wood, Essex; Apsley Wood, Bedfordshire; Dartmoor, and near Bideford; and in Bradley Wood, Devon, by Captain Blomer, as late as the 10th of July. It used to be frequent in Caen Wood, and at Faversham.

The *P. tessellata* *Petiver*, pl. 3. f. 11. & 12., and *Ste.* pl. 5. f. 1. & 2. was formerly pretty common in Caen Wood, the beginning of May, where *M. Athalia* was common also: I suspect it is only a variety of that species.

The Plant is *Viola hirta* (Hairy Violet). Communicated by J. J. Bennett, Esq.



Handwritten text, possibly a signature or date.

Bleeker 1877

HAMEARIS LUCINA.
GENUS 1851
 The Duke-of-Burgundy Fritillary.

ORDER Lepidoptera. FAM. Papilionidæ *Lat., Leach.*

Type of the Genus, Papilio Lucina Linn.

HAMEARIS Hüb.—Nemeobius *Step., Hors.*—Papilio *Lin., Fab., Haw.*

Antennæ inserted on the crown of the head, rather short and slender, composed of about 40 joints, terminated by a club with a fleshy apex (1), abrupt and spoon-shaped when dry.

Maxillæ spiral, not more than half the length of the antennæ; a considerable portion of the apex fringed with tentacula (3).

Labial Palpi short, not extending so far as the tuft of hair between the eyes, porrected nearly horizontally, thickly clothed with scales, being hairy on the underside, and tapering to the apex (4); triarticulate, basal joint nearly half the length of the 2nd, which is very long, 3rd minute ovate (4a).

Head rather small and short, tufted in front. Eyes pubescent (7, front view of the head). Wings; superior subtrigonal, inferior rounded.

Legs, anterior spurious and tippet formed in the Male, the Thigh very short scaly and pilose: Tibia longer, producing very long hairy scales: Tarsus composed of one lanceolate joint, terminated by a spine (8♂): perfect, longer and clothed with short scales in the Female; the thigh longer than the tibia: tarsi 5-jointed, basal joint the longest, penultimate the smallest. Claws and Pulvilli simple and distinct (8♀). Posterior tibiæ spiny towards the apex on the inside, but not spurred.—Larva onisciform.

LUCINA *Linn. Faun. Suec. p. 280. n. 1061.*

Male. Antennæ white, dotted with black above; the club black, tipped with orange. Upper side dark brown, the superior wings with 2 little straw coloured spots on the costa beyond the middle, 2 lunular dull orange marks near the centre, a large spot beyond, divided by the nervures, and 3 roundish ones below, forming a curve; upon the posterior margin are 6 or 7 ovate orange spots with brown pupils: inferior wings with an obscure orange spot near the base, an irregular line of 5 orange spots across the middle, and 5 semiovate ones on the margin bearing black lunules; cilia spotted alternately black and white. Underside orange; superior wings with several oval straw-coloured spots, interspersed with patches and markings of black, a row of semi-ovate straw-coloured spots on the margin, orange across their centre, with a black dot or line in the middle: inferior wings ferruginous-orange, freckled at the base, a fascia of 6 pale yellow spots before the middle, and a more irregular one beyond it of 9 spots of the same colour, edged internally with black; an obscure blackish crenated striga towards the posterior margin, with a straw-coloured spot at the outer extremity, and between the nervures a row of black spots, with 2 yellow dots attached to each. *Female* frequently larger, black instead of brown, with the orange spots larger and brighter.

THIS pretty little Butterfly formed a part of the Genus *Melitæa* until it was separated from it by Hübner in his *Europaischer Schmetterlinge*. It is an insect that is very interesting in its structure, and differs most essentially from *Melitæa* and *Argynnis* in the form of the anterior feet of the females, which are perfect; whereas in those genera they are spurious in both sexes, a point to which my attention was first called by Dr. Horsfield. As far as regards the arrangement of European Lepidoptera, I think the situation given to *H. Lucina* in the *Wiener Verzeichnis*, (between *Melitæa* and *Lycæna*) is most natural, whether we consider its habit, structure, or transformations.

Figures of the Larva and Pupa have never been given by any one but Hübner, from whose work I have copied them, as well as the following valuable remarks.

Stirps III Napææ—Genus *Hamearis* *Hüb.*

The eggs are found solitary or in pairs on the under surface of *Primula veris* and *elatior* (B. E. pl. 282) at the beginning of summer; they are almost globular, smooth, shining, and pale yellowish green: the caterpillar feeds on the leaves, its head is roundish-heartshaped, smooth, shining, and bright ferruginous, black only on the mouth and about the eyes; its body is almost oval, but long, depressed, and set with rows of bristly warts, the other parts are clothed with feathery hairs; on the back, at least from the 4th joint to the tail, there is a black dot on each joint, and on the sides similar, but less distinct spots, the colour is pale olive brown, its feet are rusty brown; the spiraculæ black; claws and belly whitish. It moves very slowly, rolls itself up when disturbed, and remains in that state a long time; soon after the middle of summer it becomes a pupa, not only fastening its body by the apex, but also by spinning a cord around its middle; in this state it remains until the end of the following spring. Hübner, who reared it from the egg, says also that the caterpillar throws off 5 skins before it becomes a pupa, and its appearance at different ages varies considerably. The larva represented he found on a *Primula* in his own garden. *Hüb. E. S. p. 7 & 8.*

It is necessary to observe that the eyes of this butterfly are pubescent, for they have been lately described as naked. It is never very abundant I believe in England, although from a list of localities with which Mr. Dale has favoured me, it seems to be generally distributed from Dorsetshire to Northamptonshire, and has been taken from the 8th of May to the 27th of June.

Mr. Stone has a curious variety of a pale fulvous colour, with the spots still paler.

The plant is *Primula vulgaris* (Common Primrose).



THECLA PRUNI.

Brev. p. 123
The black Hair-streak.

ORDER Lepidoptera. FAM. Papilionidæ *Lat., Leach.*

Type of the Genus Papilio Betulæ Linn.

THECLA *Fab., Leach., Sam., Step.*—*Polyommatus Lat.*—*Papilio Linn., Fab., Haw., Hüb., Och.*

Antennæ inserted close to the eyes on the crown of the head, rather short, clavate, gradually thickening to the apex, which is oval or conical (1).

Maxillæ shorter than the antennæ, convoluted, furnished with tentacula at the apex (3).

Labial Palpi porrected obliquely, clothed with short scales, slightly hairy beneath (4); triarticulate, basal joint short slightly curved, 2nd long, a little attenuated, 3rd not longer than the 1st, slender and oval (4 a).

Head small (7* the profile; 7 the underside). Eyes oval pubescent. Thorax ovate. Abdomen rather short. Wings; superior subtrigonate, inferior producing one or 2 caudal appendages near the anal angle. Legs alike in both sexes, robust and rather short. Tibiæ with the spurs very short. Tarsi 5-jointed, basal joint the longest and dilated, 3 following very short transverse, 5th short. Claws and Pulvilli minute (8, a fore leg).

Larvæ onisciform, short, thick, attenuated at both ends, pilose, with 6 pectoral, 8 abdominal, and 2 anal feet.

Pupæ short, attached by the tail which is pointed, and girted round the middle, the head which is rounded being uppermost.

PRUNI *Linn. Faun. Suec. p. 283. n. 1071.*

Brownish black. Antennæ annulated with white, the tips ochreous, margins of the eyes and portions of the palpi silvery white. Inside of legs silvery white, tarsi annulated with the same, the thighs clothed with long bluish hairs. Superior wings with an oblong spot near the costa: inferior with 3 or more lunular scarlet spots near the margin, with a small bluish one at the anal angle. Beneath brown with an ochreous tinge; superior wings with a bluish silvery transverse line towards the margin, nearer to which are several undefined scarlet spots, each of which bears a black spot with a silvery edge; inferior wings with a broken silvery line nearly across the middle, forming an obtuse W near the abdomen; fimbria scarlet, with a black semi-circular spot between each nervure, at the base of the cilia, terminated by a silvery line, the anal one having a bluish silvery spot upon it, and at the inner margin of the fimbria are 6 or 7 black spots edged on the upper side with silver.

In the Author's and other Cabinets.

IN distinguishing *Thecla* from *Lycæna*, I must confine myself to the British species; and for the exotic forms I would refer the student to Dr. Horsfield's valuable remarks and beautiful illustrations in his descriptive Catalogue of Indian Lepidoptera. The sombre tints of the upper side of the wings and the plainer under sides, characterize our genus *Thecla*; and the inferior wings with one exception have caudal appendages; the antennæ are shorter, with less abrupt and dilated clubs than in *Lycæna*; the terminal joint of the palpi (at least in the types) is also shorter in *Thecla*, and the eyes are pubescent.

The following Insects may be recorded as British.

1. *T. Betulæ* Linn.—Don. 7. 250.

Found in Woods the middle of August, at Coombe, Birch, and Darent; it has also been taken in Norfolk, Suffolk, Dorset, Devon, &c.

2. *T. Quercus* Linn.—Don. 13. 460.

Found the middle of July, in the same districts as the last, but more frequently.

3. *T. Pruni* Linn.—Curt. Brit. Ent. pl. 264.

This insect was so totally unknown to the entomologists of Britain until lately, that the following species has constantly been described as the *T. Pruni*. It was, however, taken last July, in Yorkshire, by Mr. Seaman, in such abundance, that it is now to be seen in almost every Cabinet. I am indebted to Mr. Davis for first calling my attention to the subject, as well as for the example figured, which he purchased at Ipswich. The Plant, Caterpillar, and Chrysalis are copied from Hübner.

4. *T. W-album* Hüb. Goda.—Pruni Haw. Steph.

A rare insect until lately. Mr. F. Walker took it at Southgate the end of June, on the *Spiræa frutex*; it has also been taken in profusion in Surrey, the middle of July. I once saw a specimen taken near Bungay, Suffolk.

5. *T. Spini* Steph.—Fab.?

In Mr. Haworth's Cabinet is a specimen of *Thecla* ticketed *Spini?*, which that gentleman informs me was purchased in an old English Collection. He was always doubtful whether it were the *T. Spini*; as it does not agree with the figures of that insect, any more than it does with Mr. Stephens's descriptions. Mr. Sparshall possesses a specimen which he received from some of his correspondents in town.

6. *T. Rubi* Linn.—Don. 13. 443.

This pretty insect is found on White thorn hedges and brambles, from the beginning of May to the same period of June, and again the early part of August.



Butterfly of the genus London Mar 1 1850

12.XV

Polyommatus

LYCÆNA DISPAR. The large Copper.

Recent Catalogue 1851

ORDER Lepidoptera. FAM. Papilionidæ Lat.

Type of the Genus Papilio Phlæas Linn.

LYCÆNA Fab. Papilio Linn. Polyommatus Lat.

Antennæ slightly bent, composed of about 30 joints, the second, third, and fourth very short, the club ovate, sometimes slightly elongated, compressed at the apex. (1.)

Maxillæ long and spiral.

Labial Palpi porrected, first joint bent, covered with scales and hair; second very long, thickly covered with scales and hair; third joint slender, attenuated, and appearing naked. (f. 4. a palpus with the covering removed to show the joints; their natural situation and appearance are shown in f. 7. a front view of the head.)

Tarsi 5-jointed, the first equal in length to the remainder.

Claws small, projecting beyond the pulvilli, which are small also. (8.)

Wings all elevated when at rest: no hook or catch at the exterior edge of the lower wings to retain those above.

Larva oval, formed like a wood-louse, with 16 feet. Lat.

Pupa short, contracted, obtuse at both ends. Lat.

L. DISPAR Haw. Lep. Brit. p. 40. 51.

P. Hippothoë Esper., Lewin, & Don.

Male, upper side, bright and deep copper colour, shining, with a black spot in the upper, and a narrower one in the under wings; posterior margins black, in the inferior wings crenated; base of upper wings and abdominal margin of lower black, ciliæ white. Head, thorax and abdomen black, with yellowish hair. Antennæ black tipped with brown, and annulated at the joints with white. Eyes margined white. Under side; upper wings copper colour with a cinereous margin, having 7 black spots upon its internal edge, 3 black ocellated spots parallel with the costa, an irregular transverse line of 7 ocellated spots, and 2 more obscure, near the interior margin: lower wings pale blue shaded into cinereous, with a copper-coloured fascia at the posterior margin, having 8 black spots upon its internal, and 6 minute black spots upon its external edge, an oblique irregular line of 9 ocellated spots next, then a long narrow black spot, and 3 and 2 black ocellated spots nearer the base, ciliæ cinereous. Abdomen and legs whitish. Female larger and less bright, with the costa and base of upper wings duller, the nerves black towards the margin, and the spots of the underside appearing through, large, and not ocellated: under-wings black with red nerves and a copper-coloured fascia close to the margin:—under side similar to male.

In the Author's and other Cabinets.

LATREILLE has divided this beautiful genus into those with the hinder wings more or less tailed (viz. *L. dispar*, *Chryseis*, *Virgaurea* and *Phlœas*); and the others with the posterior margin entire, comprising the Blues or Argus Butterflies, amounting to 10 British species.

The splendid species selected to be figured was first discovered in Wales, as we are informed by Mr. Haworth in his valuable work "*Lepidoptera Britannica*," by the celebrated botanist Hudson. It has subsequently been captured by Dr. Skrimshire and Mr. H.; and lately in considerable abundance by Messrs. Benjamin* and Joseph Standish, who went down to Whittlesea Meer, Huntingdonshire, in expectation of finding it. They inform me that the end of July is undoubtedly the right season for this Insect, although they met with it the beginning of August 1822 and -23, flying amongst reeds, about the centre of the Meer near Yaxley; that it is very active, and in windy weather conceals itself amongst the highest reeds; upon which the Caterpillar probably feeds, as they found the Butterfly upon that plant just emerged from the chrysalis, drying its wings. I have therefore introduced in the plate a leaf of *Arundo Phragmites* (Common Reed): the Insect at rest is the male, that flying the female.

* Two collectors; of whom I purchased *L. dispar*,—and who dispose of all the Insects they take. One lives at 10 Weymouth-street, New Kent Road; the other at 10 King-street, Old Kent Road.



HESPERIA ACTÆON.*

The Lulworth Skipper.

ORDER Lepidoptera. FAM. Papilionidæ.

*Type of the Genus, Papilio Comma Linn.*HESPERIA *Fab., Lat., Curt.*—*Pamphila & Thymele Fab., Ste.*—*Papilio Linn., Haw., &c.**Antennæ* inserted on the crown of the head close to the eyes, rather short and clavate, basal joint cup-shaped, furnished with 2 brushes of hair, one curving over the eyes; club more or less fusiform, the apex generally bent and forming an acute hook (1 the base and apex).*Maxillæ* as long as the whole body, spiral and slender (3).*Labial Palpi* stout, parallel, not meeting, ascending nearly perpendicularly, densely clothed with scales, triarticulate, basal joint stout, somewhat ovate, 2nd very robust subovate and a little curved, 3rd minute ovate, porrected obliquely and clothed with bristly and shorter scales (4 and 4 a).Head *broad and rather flat*. Eyes *remote, orbicular* (7 and 7*). Thorax *ovate*. Abdomen *short and stout*. Wings, superior *more elevated than the inferior when at rest, the former subtrigonal, the latter rounded*. Legs *alike in both sexes, rather long*. Tibiæ, anterior *short, the others spurred at the apex, the hinder pair with spurs also below the middle* (8†). Tarsi *long and 5-jointed*. Claws and Pulvilli *small*.Larvæ *elongate, head large, 6 pectoral, 8 abdominal and 2 anal feet*.Pupæ *inclosed in a web or in a leaf that is held together by threads*.Obs. *H. Sylvanus was the species dissected.*ACTÆON *Esp., Hüb., Och., Goda.*—*Curt. Guide, Gen. 780, 6^a.**Male* fuscous, with an orange lustre upon the wings, the rest of the insect clothed with hairs of the same colour: antennæ ochreous beneath, ferruginous at the tips: palpi pale blue at the base: superior wings with a longitudinal curved black line on the disc, inferior slightly produced at the anal angle. Underside more uniformly orange than the reverse.*Female* a little larger, with a flame-shaped orange spot towards the base, terminated by a lunular line of a paler colour, turned upward and extending to the costa and divided by the dark nervures into 6 or 7 spots. Underside with a pearly ochre lustre, a large orange flame-shaped mark on the upper wings extending to the spots which shine through; the underwings with an oblique portion of the internal margin yellowish orange.*In the Cabinets of Mr. Dale, the Author, &c.*

THESE singular insects approach the Sphingidæ in the extreme length of the maxillæ, and the Noctuidæ and Phala-nidæ in their metamorphoses and doubly spurred posterior tibiæ. The palpi are so densely clothed with scales and so very tender, that although the relative proportions in fig. 4 a are correct, the outline may vary a little. It is rather remarkable that old specimens when alive have frequently lost one or both

* *Berces-I 233*

of their palpi, an accident I have never observed in any other Lepidoptera, excepting a few of the *Pyrilidæ*.

From the vast number of species the genus *Hesperia* contained, Fabricius proposed to divide it, but whether sufficiently good characters can be found I am not prepared to say; I can therefore only state that he gave the name of *THYMELE* to the 4 first species, and *PAMPHILA* to the remainder.

1. *H. Alveolus* *Hüb.*—*Malvæ* *Harw.*—*Cardui* *Goda.*—End of May, b. June, meadows, commons, woods, &c.
2. *H. Malvæ* *Linn.* I have found at Toulon, and believe it is not British, although Donovan's figures (vol. 16. pl. 567.) appear to be this species.
3. *H. Tages* *Linn.*—Beginning of May, June, and middle of July, meadows, dry heaths, banks, and road-sides in various parts of England and Scotland.
4. *H. Oileus* *Gmel.*?—Said to have been taken by Dr. Abbot in Bedfordshire, and specimens from Leman's ancient English cabinet are preserved in the Manchester Museum, but they all agree with the North American species.
5. *H. Paniscus* *Fab.*—*Don.* 8. 254. 1.—Rare; the caterpillar feeds upon *Cynosurus cristatus* (Brit. Ent. pl. 135.) and the Great Plantain: the imago has been found the end of May at Caistor Hanglands Wood, near Peterborough; Clapham Park Wood, Bedfordshire; Whitewood Gamlingay, Cambridgeshire, Oxfordshire, and near Dartmoor.
6. *H. Linea* *Fab.*—*Don.* 7. 236. 2.—Beginning of July, middle of August, about bushes, skirts of woods, &c.
- 6^a. *H. Actæon* *Esp.*—*Curt. B. E. pl.* 442.—The insect at the top of the plate is the male, the other flying the female; the male at rest is represented of the natural size. We cannot often hope to record the addition of a Butterfly to our British Fauna, but this species was discovered at Lulworth Cove in Dorsetshire, last August, by J. C. Dale, Esq. through whose liberality it now ornaments most of our cabinets: it was found upon Thistles, and was very local.
7. *H. Sylvanus* *Fab.*—*Don.* 8. 254. 2 ♂.—End of May to August, borders of lanes and woods.
8. *H. Comma* *Linn.*—*Don.* 9. 295. ♀.—July, end of Aug., chalky places, Old Sarum, Devil's Dyke, Cambridgeshire, Wiltshire, Dover, Sussex, &c.
9. *H. Bucephalus* *Ste. pl.* 10. *f.* 1. & 2.—Taken near Barnstaple by Mr. Raddon; and a male at Godalming, Surrey, by Mr. Newman.
10. *H. Vitellius* *Fab.*—Said to have been taken in Bedfordshire by Dr. Abbot; and I believe Mr. Hatchett has a pair which he purchased.

The plant is *Salsola Kali* (Prickly Glasswort).



Drawn by J. Guerin Men. 1. 1830

Bonn II Pl. 24 fig. 1.

INO STATICES.

The green Forester.

ORDER Lepidoptera. FAM. Zygaenidæ.

*Type of the Genus, Sphinx Statice Linn.*INO *Leach, Sam., Curt.*—*Procris Fab., Lat.*—*Atychia Och.*—*Zygaena Panz., Haw.*—*Sphinx Linn., Hüb.*

Antennæ inserted on the crown of the head, approaching the eyes, rather long and clavate, composed of numerous small joints, bipectinated beneath in the male, excepting 8 or 9 of the apical joints, which are large and produced internally, forming a serrated club (1 ♂): simple and clavate in the female (1 ♀).

Maxillæ slender and spiral, as long as the antennæ (3). *Palpi* small, indistinctly articulated, being slender at the base, with a hairy lobe on the side, the apex large and somewhat globular (3a). *Labial Palpi* short and small, sparingly clothed with scales, tri-articulate, basal joint the largest, 2nd half the size, both somewhat obovate, 3rd as long as the 2nd but slender, elliptic-conic (4 and 4a).

Males larger than the females. Head short, front clothed with depressed scales and hair. Eyes lateral prominent and subglobose. Thorax rather small and smooth. Abdomen rather short, slightly obtuse in the male. Wings somewhat deflexed when at rest, rather long and narrow, semitransparent; inferior with the discoidal cells closed behind: cilia short and thick. Legs slender. Tibiæ; posterior longer than the thighs, with minute scaly spines at the apex (8†), as well as the intermediate pair. Tarsi long and 5-jointed, basal joint the longest. Claws distinct curved and acute.

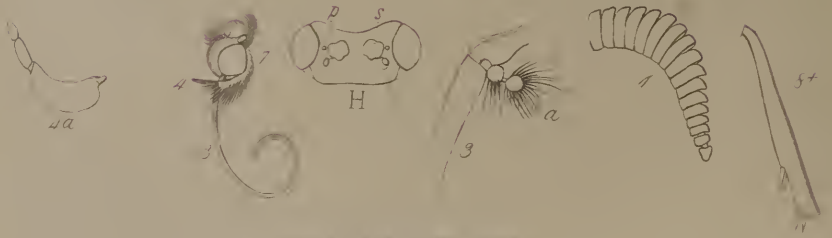
Larvæ short thick and slightly pubescent; head small; 6 pectoral, 8 abdominal and 2 anal feet. Pupa unknown.

STATICES *Linn. Faun. Suec. p. 290. n. 1098.*—*Curt. Guide, Gen. 781. 1.*

Semitransparent, fuscous: antennæ and legs blackish, the rib of the former glossy-green as well as the thighs: head, thorax, abdomen and superior wings clothed with beautiful green silky scales, sometimes golden, especially the abdomen, which in some inclines to a bright copper colour.

In the Author's and other Cabinets.

ON examining the antennæ of the males of *I. Statice*, it will be seen that they offer a very remarkable character: the joints



Handl. Schumacher 1855

Besler II. N. 46 f. 8

ZYGÆNA FILIPENDULÆ.

The Six-spot Burnet Sphinx.

ORDER Lepidoptera. FAM. Zygænidæ.

Type of the Genus, Sphinx Filipendulæ Linn.

ZYGÆNA Fab., Och., Haw., Goda, Curt.—Anthrocera Scop.—Thermophila, Lycastes and Mesembrynus Hüb.

Antennæ inserted on the crown of the head (H s), somewhat approximating, rather long in the male, curved, clavate and bent, pointed and simple at the apex, composed of numerous, velvety short joints (1, a portion of the apex).

Maxilla slender, spiral, as long as the antennæ and destitute of tentacula (3). Palpi attached to the base (3 a) formed of 2 subglobose joints, distinctly articulated and clothed with long bristly scales.

Labial palpi projecting beyond the head, clothed with long hairy scales beneath, the apex pointed (4); triarticulate, basal joint long, inflated and curved, 2nd short narrow and elliptical, 3rd small and ovate (4 a).

Head short with a tuft of hairs on the crown: eyes globose prominent and lateral (7): ocelli? 2 rather large and somewhat behind the antennæ (H o), with 2 semitransparent dots between these and the eyes (p). Thorax and Abdomen hairy, the latter somewhat cleft at the apex in the male, stouter and ovate-conic in the female. Wings very much deflexed in repose, superior lanceolate, inferior much smaller: cilia very short. Thighs short: tibiæ, anterior the shortest with an internal spine, the others with minute spurs at the apex, the hinder with a very minute pair also a little above the apical ones (8 †): tarsi nearly of equal length, 5-jointed, basal joint the longest: claws curved and acute; pulvilli small. Larvæ slightly attenuated at both ends, pubescent, head minute with 6 pectoral, 8 abdominal and 2 anal feet.

Pupæ inclosed in a boat-shaped silken cocoon, very smooth and of very close texture.

FILIPENDULÆ Linn.—Curt. Guide, Gen. 782. 3.

Greenish-black: superior wings dark satiny green, with 3 pairs of intense crimson spots: inferior wings crimson with an irregular blue margin, very narrow in the females; upper side of antennæ and abdomen of the male blue: inside of legs especially the thighs and tibiæ tawny.

In the Author's and other Cabinets.

THE beautiful satiny green or blue upper wings spotted with the purest carmine, with under wings of the same brilliant colour, distinguish this group from all others. Savigny has described the labial palpi of Z. Scabiosæ as formed of 2 joints, and has represented them so in his beautiful outlines, but in our species there were three; the apical one being densely clothed with scales rendered it difficult to detect. I discovered 2 transparent dots close to the antennæ (fig. H p) which I had not before observed in any insect, and the ocelli are very large. The Zygænæ fly by day, but are very sluggish and heavy on

1/ Becal II, 76

the wing, and sometimes appear in immense quantities amongst wild flowers and grass in meadows and on the sea-coast, generally towards the end of June, when they appear in their different stages at the same time. The folly of adopting Hübner's divisions is very conspicuous in this natural group, which he has divided into 3 genera.

The following species have been recorded as British, but from Mr. Wood's figures I very much doubt their being distinct, and shall therefore give Ochseneimer's characters which have been copied by Mr. Stephens.

1. *Meliloti* Och.—*Hüb. Sph. t. 17. f. 82. ♂*. “Anterior wings black-green or green-blue, subdiaphanous, with 5 red spots: posterior red, with a narrow black-green margin.” Och.

End of June, West Horsley Park, Surrey. *Steph. Ill.*

2. *Loti* Fab.—*Don. v. 9. pl. 319.*—*Lonicæræ Hüb.* “Anterior wings black-blue with 5 red spots, same colour beneath: posterior red, with a broad sinuated black-blue margin; antennæ entirely black.” Och.

Common in marshy situations the end of June, also the end of May and beginning of June.

2^a. *Trifolii* Esp. *tab. xxxiv. cont. ix. f. 4 & 5.* “Anterior wings blue, with 5 red spots (the 2 central united) same colour beneath; posterior red with a broad cyaneous margin.” Och.

This is the variety of *ℤ. Loti* with confluent spots commonly called by English collectors *ℤ. Scabiosæ*, but the continental one is a very distinct insect.

3. *Filipendulæ* Linn.—*Curt. Brit. Ent. pl. 547 ♂*. with the caterpillar and a cocoon.

Obs. The 6th red spot is occasionally nearly obliterated in this species, and sometimes it is slightly apparent in *ℤ. Loti*.

Very abundant in hay-fields and upland situations; I have observed it from the beginning of June to the 4th of August. Found also in July on a rocky hill near Dunrobin Castle in the County of Sutherland.

3^a. *Hippocrepidis* Hüb. *t. 5. f. 32 ♀. t. 17. f. 83 ♂*. “Anterior wings black-blue, with 6 scarlet spots, all confluent beneath; posterior red with a sinuated black margin; abdomen immaculate.” Och.

In France it is only found in the departments on the borders of Switzerland. Mr. Stephens says he has taken it in Coombe Wood 20th June, and near Darent Wood.

4. *Peucedani* Esp.—*Hüb. t. 16. f. 75. & 76.* “Anterior wings black-blue, with 6 red spots confluent beneath: posterior red with a broad blue margin; abdomen with a red ring; apex of the antennæ white.” Och.

A very variable species, and probably British, being figured by Wilks in his “English Moths and Butterflies.”

The Plant is *Valeriana officinalis* (Great wild Valerian), over the flowers of which I have frequently seen *ℤ. Filipendulæ* hovering, and dexterously inserting its proboscis into the corollæ.



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Macroglossa SESIA BOMBYLIFORMIS.

Narrow-bordered Bee Sesia.

ORDER Lepidoptera. FAM. Sphingidæ Lat.

Type of the Genus Sphinx fuciformis Linn.

SESIA Fab. Sphinx Linn., Fab., Lat., Haw.

Antennæ composed of many joints, with the club prismatic, slightly hooked, terminated at the apex by an oblique, slender style of two joints; those of the male ciliated beneath (1. the terminal joints), of the female more cylindrical, simple. (2.)

Labrum and } attached to the clypeus.
Mandibles }

Maxillæ very long and spiral.

Palpi 2, meeting over the maxillæ (7.); projecting a little beyond the head, completely covered with hairy scales (4.); 3-jointed, first joint short, second long, robust, curved upward, third very minute (4. a.)

Abdomen hairy, with the apex bearded. Wings more or less transparent, horizontal or deflexed in repose; with a hook or catch at the exterior edge of the lower wings to retain those above.

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal feet, with an elevated horn at the extremity of the abdomen.

BOMBYLIFORMIS Esper Schmet. 2. t. 23. f. 2. Fab. Ent. Syst. t. 3. pars 1. p. 382. n. 12. Haw. Lep. Brit. p. 68. n. 16.

Golden green, 2d and 3d segments of abdomen nearly black, most intense on the sides; 4th and 5th bright orange: beard to the abdomen black, orange in the centre. Wings transparent, iridescent, the superior with the costa, posterior margin, and the base extending along the interior margin brown; inferior with the abdominal margin and a narrow fimbria also brown: beneath pale yellow and black. Antennæ cyaneous. Tarsi fuscous.

In the Author's and other Cabinets.

THE beautiful transparent wings of this Genus at once distinguish it from *Macroglossum*, to which it is most nearly allied; whilst the ovate and hairy abdomens and sphinx-like form (as well as the tailed Caterpillars) are sufficiently obvious characters to separate it from *Ægeria*.

S. bombyliformis may be easily distinguished from the more

common one (*S. fuciformis*) by the narrow border of the wings, which is entirely brown, by the black instead of crimson band across the abdomen, and by the under side, which is variegated with black and white.

The larvæ, which have erroneously been stated by some authors to feed upon the wood of Willows, have been bred from the eggs by my friend J. C. Dale, Esq., to whom I am indebted for a drawing and account of the Caterpillars: when about ten days old they have several furcate spines upon each segment of the abdomen, that entirely disappear when they are full fed, at which period they vary exceedingly.

The perfect insects are remarkably swift upon the wing, and make a humming noise similar to a humble-bee; they have been taken by Mr. Dale at Enborne, near Newbury, Berkshire, in some abundance, the end of May and beginning of June: they are much attached to damp places in woods and moist meadows, where they are attracted by various flowers, especially *Pedicularis palustris* and *sylvatica*, about which they fly, extracting honey from the nectaries whilst on the wing, like the Humming Bird and other *Sphinges*.

Scabiosa succisa (Devil's-bit Scabious), the plant upon which the Caterpillars feed, is figured in the plate.

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Impatiens furcata



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MACROGLOSSA STELLATARUM.

The Humming-bird Sphinx.

ORDER Lepidoptera.

FAM. Sphingidæ.

*Type of the Genus, Sphinx Stellatarum, Linn.*MACROGLOSSA Och., Curt.—Macroglossum Scop.—Sphinx Linn.
Haw., Hub., Goda.

Antennæ inserted on each side of the head between the eyes, scarcely longer than the thorax, scaly above, clavate, very slender at the base, and thickest towards the apex, which is hooked, scaly and terminated by a few hairs (1): stouter and ciliated beneath in the male.

Maxillæ very long, spiral and slender.

Labial palpi forming a conical beak, densely clothed with scales outside (4), meeting above the maxillæ, stout and triarticulate (a), basal joint elongated and curved, 2nd longer, ovate and very much inflated, 3rd small slender and elongate-ovate.

Head broad, rather long and conical: eyes not prominent, small lateral and orbicular. Thorax large and oval. Abdomen very broad, depressed-convex, the segments beyond the middle tufted on the sides, the apex with a broad spreading tuft of long scales in both sexes; concave beneath. Wings forming a triangle in repose; superior moderate, sublanceolate, the apex pointed, interior angle slightly falcated: inferior wings small trigonate-ovate: cilia very short. Legs moderate: thighs rather short: tibiæ, anterior short with a strong internal spine, intermediate with a pair of acute spurs at the apex; hinder not longer, compressed, dilated, ciliated outside, with 2 pairs of acute spurs, one spine long, the other very short: tarsi long, especially the hinder, spiny beneath, 5-jointed, basal joint the longest, 5th the smallest: claws small.

Larvæ naked, with 6 pectoral, 8 abdominal, and 2 anal feet, and a caudal horn. Pupæ inclosed in a cocoon on the ground.

STELLATARUM Linn.—Curt. Guide, Gen. 784, 1.

Olive-brown or mouse colour; head and thorax of a greener tinge, palpi and anterior coxæ white: superior wings clouded, with a black waved striga before, and a double crenated one, black only towards the costa, beyond the middle, with a dot between them; towards the posterior margin are 2 other faint crenated strigæ, inferior wings deep bright orange, brownish at the base, posterior margin softened into bright rust-colour, vanishing at the anal angle: cilia brownish: abdomen black beyond the middle, 3rd segment with a large yellowish spot extending on to the 4th which has a bundle of pure white scales on each side, 5th and 6th with the tips only of the fascicles yellowish white.

In the Author's and other Cabinets.

THIS interesting and lively moth is so frequent a visitor of our gardens, that every one who takes pleasure in the cultivation of flowers must have been attracted by its remarkable habits. When meditating on the beauty of a flower, how often have I been surprised by the appearance of this fairy moth, which came as it were by magic, in an instant, and whilst poised on its vibrating wings, introduced its long spiral tongue to the base of the corolla to extract the nectar concealed there! it has then vanished with the same swiftness that it came. The vibration of the wings causes a slight humming sound, which has not only furnished its trivial name, but has led to an erroneous opinion that "Humming-birds" inhabit this island; and I have met with persons of education, who had been probably long absent from this country, who could scarcely be convinced that the little animal they had seen hovering over their flowers was not actually a Humming-bird, like those they had seen in America and the West Indies.

Mr. Dale has recorded the appearance of this moth, which extends from the 26th of April to the 13th of October; but I think it is most abundant in July and September, and although there may be three annual broods, there is no doubt a more or less regular succession of this insect during the summer, partially influenced by the state of the weather.

M. Stellatarum is particularly attached to the sea-side, in consequence of the abundance of food which grows there for the caterpillars. I think the greatest number I ever saw was at Dover, where scarcely a plant in flower had less than three or four hovering round it. The moths fly in the morning between 10 and 12, and again between 2 and 4 o'clock in the afternoon according to Mr. Haworth's observations. They delight exceedingly in fine weather, yet I have seen them in very showery days, and by the shattered state of their wings, it is evident that they are often much exposed to the weather; it may also be presumed that they live longer than most insects in their perfect state, and this opinion is strengthened by Mr. Haworth having found a specimen at Christmas. The Larva feeds upon *Galium verum* (pl. 317), and *aperine* and *Rubia tinctorum* or *peregrina* (pl. 327), and is found principally in March, June, and August.

I am indebted to B. Kennedy, Esq., L. Sullivan, Esq., and the Hon. and Rev. C. A. Harris for the beautiful Touch-me-not, *Impatiens fulva*, which grows spontaneously and in great abundance on the banks of the river by Shalford Mill, near Guildford.



DEILEPHILA EUPHORBIÆ.

Spotted Elephant Hawk-Moth.

ORDER Lepidoptera. FAM. Sphingidæ Lat.

Type of the Genus Sphinx Elpenor Linn.

DEILEPHILA Och.—Eumorphæ Hüb.—Spectrum Scop.—Sphinx Linn., Fab., Haw.

Antennæ inserted at the back part of the head close to and between the eyes, uncinated, longer and more robust in the males, subfusiform, covered with scales above, each joint producing a row of cilia beneath (1 a), the apex terminated by a long, subulated joint, producing a few bristly scales (1) : subclavate and not ciliated beneath in the females.

Labrum short (2 a).

Mandibles remote incurved, thickly ciliated internally (2 b).

Maxillæ (forming the proboscis) long and spiral, (3, is a portion of one, showing the base, the internal margins and the semicylindric canal).

Labial Palpi lying close to the head, broad when viewed in front, covered with short close scales very much recurved and obtuse, 3-jointed, basal joint long and quite bent, 2nd very large, subovate, 3rd tuberculiform, indistinct (4, the scales being removed to show the articulations).

Head trigonate. Eyes globose sometimes rather small. Abdomen conical, not tufted, in some very much attenuated. Wings, superior trapezate-lanceolate; inferior rather small. Cilia short. Claws hooked distinct. Larvæ with 6 pectoral, 8 abdominal, and 2 anal feet : the tail sometimes wanting.

EUPHORBIÆ Linn. Faun. Suec. n. 1086.—Fab. Ent. Syst. tom. 3. pars 1. p. 367. 37.—Haw. Lep. Brit. p. 61. 8.

Head and thorax olivaceous, margined with white. Abdomen rosy, the back olivaceous, sides of the first 3 segments white, with intense black spots upon the two first, and a white stripe on each side of the 3 following. Superior wings dull rosy, with a black and white spot at their base; the costa, a large spot attached near the base and another towards the disk olivaceous, and a stripe arising from the interior margin (which is white) and attenuated to the apex olivaceous also; posterior margin rosy inclining to olive colour. Inferior wings deep rose colour, white next the abdomen, black at their base, with a black sinuated narrow fascia parallel to the posterior margin : cilia white. Antennæ white above, fuscous beneath. Legs white, anterior pair fuscous on the under side. Beneath rose-coloured, a little spotted with olive, with an obscure blackish spot in the centre of each of the upper wings.

The males have less black in the under wings than the females, and a variety of the former sex has occurred, with the fascia on the inferior wings of a dark-rose colour instead of black.

In the Author's and other Cabinets.

THE Sphingidæ or Crepuscularia have been divided into 3 tribes or families by Latreille; the Hesperis-Sphinges, the Sphingides, and

the Zygaenides : of the first there are no examples natives of Britain, indeed I believe it is an extra-European family ; of the 2nd we possess all the genera, and of the 3rd some account will be found at folio 53 of this work.

The Sphingidæ are distinguished from the Zygaenidæ by the very small 3rd joint of the labial palpi, which are robust and thickly clothed with scales, and by the uncinated apex of their antennæ. The caterpillars have either a tail or a tubercle at the extremity of the back, are perfectly naked ; and with the exception of a few which cover themselves with leaves, always descend into the earth to change to pupæ.

The following genera compose the family of Sphingidæ as it now stands, viz. : Smerinthus, Acherontia, Sphinx, Deilephila, Macroglossum, and Sesia ; the 2nd has been already described at folio 147, the 3rd at folio 195, the 6th at folio 40 ; and having observed that Deilephila (a genus proposed and established by Ochsenheimer in the *Schmetterlinge von Europa*, and signifying Lovers of Evening) may be distinguished from the true Sphinx by its shorter and subclavate antennæ, and from Macroglossum by its acuminate and conical abdomen, we shall proceed to describe the species that are natives of this country, and to give some account of them.

1. *D. Celerio* Linn. *Syst. Nat. v. 1. pars 2. p. 800. n. 12.*—*Haw. Lep. Brit. 61. 7.*—*Don. Brit. Ins. 6. 190 & 191.*

Light brown, abdomen very long and attenuated, with a double white line down the back and an interrupted one on each side. Superior wings with an oblique silvery line extending from the interior margin to the apex, the nervures silvery also : inferior wings rosy, the nervures black, a broad black band in the middle and a narrow fimbria near the margin.

The silver-striped Hawk-moth is one of the rarest of our British insects ; the 1st specimen captured was recorded by Harris, who says, it was taken in Bunhill Fields the latter end of July 1779, and that it was given to the late Mr. Francillon. Donovan states that Mr. Latham, formerly of Dartford, has a specimen which was taken at Eltham in Kent. In the collection that I purchased of Mr. Plastead was a specimen that there is little doubt was a native one : and my friend Mr. M. Haughton found one trodden upon in the King's Road, Chelsea ; Mr. Fuseli (the late Professor of Painting), who was with him at the time, having decidedly stated that it was the Vine Hawk-moth. A caterpillar was found some years since in a garden near Wisbeach, by Dr. Skrimshire ; and I saw two alive found in a garden at Norwich, the 8th of October 1810, which, if not the larvæ of this species, were unknown to me ; they changed to pupæ, but died. The caterpillars feed upon the Vine and *Galium verum*. Godart says that they change to chrysalides early in August, and sometimes the moth appears 4 or 5 weeks after, and at other times not till the following June. It is rare about Paris and to the North, but common enough in the South.

2. *D. lineata* Fab. *Ent. Syst. v. 3. pars 1. p. 368. n. 39.*—*Haw. Lep. Brit. 60. 6.*—*Don. 6. 204. 1.*—*Daucus Cram.*

Rich brown. Antennæ whitish. Head and thorax margined with white, the latter with 4 white lines down the back also. Abdomen with a white line down the middle with black spots at each articulation, and 5 large black and white spots on each side. Superior wings with a broad oblique ochreous fascia; nervures and an angular mark white: inferior wings rosy, black at the base and a fimbria of the same colour.

This species, which is common in North America, is said to have been taken in Cornwall: some mistake may however have arisen from this and the following species having been confounded. Mr. Haworth has undoubtedly described the true *Sphinx lineata*, and Mr. Donovan has figured the same species, but confessedly from a foreign specimen.

3. *D. Livornica* Esper. 2. t. 8. f. 4.—Koechlini Fuess. Arch. tab. 4 and 33.—lineata Panz. 21. 24.—Livournien Godart, t. 3. p. 40. pl. 18. f. 1.

Similar to the last. Antennæ fuscous, whitish at the apex: the thorax has only 2 whitish lines on the back, each joint of the abdomen is margined with black, marked with 3 white spots, and there are but 3 white and 2 black spots on each side from the base: the superior wings are also much narrower.

The caterpillars of this rare moth feed upon *Galium verum*, *Sonchus arvensis*, and occasionally upon the Vine, which great difference in the food may have caused the dissimilarity in the larvæ figured by Fuessly, since it is well known that such effects are produced in other Lepidoptera by the same means: they become chrysalides the end of July, and the moths appear 3 weeks or a month after. It is very common in the South of France, but it is not often found near Paris. The specimen in my own cabinet was taken near Lynn in Norfolk, and Mr. Tardy has one (if it be not *S. lineata*) that was found in a garden in Ireland.

Esper's figure being represented without the large black and white spots on each side of the abdomen at the base, is no doubt an omission of the artist, which is not surprising when it is recollected that Esper himself considered it only a variety of *S. Celerio*!

4. *D. Galii* Fab. Ent. Syst. v. 3. pars 1. p. 368. n. 38.—Esper. 2. t. 21. supp. 3.—Panz. 13. 20.

Similar to *D. Euphorbiæ*. Dark ochraceous brown. Antennæ fuscous. Abdomen with a line of white spots down the back and 3 on each side near the apex. Superior wings with an oblique sinuated pale ochreous stripe; inferior wings pale fuscous ochre, not rosy, but red near the abdominal margin: all the wings beneath with a brown fimbria.

The caterpillar of this rare moth is figured by Esper; and it is probable that the larva found in marshy ground at Barns Cray near Crayford in Kent, given in Harris's Aurelian, pl. 44. fig. b. was the same. It feeds upon *Galium verum* and *Mollugo*, and upon *Rubia Tinctorum*. The larva and moth appear at the same periods as those of *D. Euphorbiæ*. Specimens have been taken near Penzance, Cornwall; Kingsbridge, Devon; and in the neighbourhood of London.

5. *D. Euphorbiæ* Linn.—Curtis Brit. Ent. v. 1. pl. 3.

D. Euphorbiæ is eminently beautiful both in its larva and imago states; and although it was known to the earlier collectors, I am

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* "à bord des chemins, dans les lieux où abonde l'euphorbe
(Gerardiava (yparissias, Esula etc.)—Beech)

21 "Common pasture" Beech 5/12

indebted to the assiduity and liberality of my friend Mr. Raddon for being able to give its history, as well as figures of the larva, and the plant upon which it lives.

During a long residence in Devonshire, that gentleman visited occasionally the extensive sand-hills at Appledore and Braunton Burrows near Barnstaple, where *Euphorbia Paralias* grows in great abundance; and from the size and beauty of the caterpillars it would be imagined that they might readily be detected: but in the young state they are not easily discoverable; and when more advanced, they become so conspicuous that their numbers are reduced by marine birds which feed upon them:—they may however be traced by their soil, and occasionally may be seen far from the spot where they fed, at the extremity of a tall rush. They are full-grown about the middle of September, when they descend into the sand and become chrysalides, forming a loose case of earth around them, from which the moths emerge the beginning of the following June. Sometimes, however, they remain in the pupa state two seasons, as many other Lepidoptera do;—a wise provision of Nature to prevent any accident from destroying the whole brood. The sand-hills where the larvæ are found being of great extent must have been collected by the winds and storms to which they are constantly exposed: during the winter the whole soil is frequently removed, so as completely to alter the surface of the country; a great number of the pupæ must consequently be destroyed or buried at a considerable depth below the surface, where probably they lie hid until they are brought to light and life by the influence of the elements.

6. D. Elpenor *Linn. Faun. Suec.* 1089.—*Haw.* 62. 9.—*Don.* 4. 122.

Yellowish olive brown. Antennæ white, rosy at their base. Thorax white on the sides, 4 rosy stripes on the back. Abdomen with a rosy line down the back, sides and apex of the same colour, with a black spot on each side at the base. Superior wings striped obliquely with lilac, with a white dot in the centre: inferior rosy, black at the base.

The caterpillars, which are first green and afterwards brown, feed upon *Galium verum*, *Epilobium hirsutum* (Pl. 57), *Lythrum Salicaria*, and *Vitis vinifera*; they are full fed in August: the moths appear the June following, and are not uncommon in the evening flying about honeysuckles.

7. D. Porcellus *Linn. Faun. Suec.* 1090.—*Haw.* 63. 10.—*Don.* 9. 314.

Small. Olivaceous orange. Antennæ white: a great portion of the head, thorax and abdomen rosy. Superior wings variegated with rose colour at the costa, posterior margin rosy brown: inferior black at the base, with a rosy brown fimbria.

The caterpillars are found upon the same plants as the last, concealing themselves at the base of the stalks: the moths also frequent the same places, but are less common, and sometimes found as early as May.

Dr. Schwägriichen of Leipsic informs me that in Germany *D. Euphorbiæ* feeds upon *Euphorbia Esula* and *E. Cyparissias*, as well as *E. Paralias* (Sea Spurge) figured in the plate.



Deilephila (DAPHNIS) NERII.
The Rose-bay Sphinx.

ORDER Lepidoptera.

FAM. Sphingidæ.

Type of the Genus, Sphinx Nerii Linn.

DAPHNIS Hüb., Curt.—Sphinx Linn, &c.

Antennæ inserted towards the base of the head and close to the eyes, slightly attenuated at the base and apex, which latter is hooked, being terminated by a slender setaceous joint somewhat pectinated with scales, rather stout in the male, and transversely striated and fringed with hairs (1 ♂, portions of the underside and apex): slender and simply clothed with scales externally in the female.

Maxillæ not more than half the length of the animal but very spiral (3).

Labial Palpi curved upward, pressed close to the head and a little keeled (4), densely clothed with scales, rather long slender and triarticulate, basal joint curved and clavate, 2nd as long, more elliptical, 3rd very small and nearly globose (4 a).

Head *trigonate*: eyes *very large, hemispherical and prominent*: ocelli none. Thorax *not broader than the Abdomen which is conical.*

Wings *deflexed in repose, superior lanceolate, the posterior angle obtuse*: inferior *small, ovate, the apex a little pointed, the anal angle slightly lobed.* Legs *very strong*: thighs *short*: tibiæ *densely clothed with scales, anterior with a large internal spine, intermediate with 2 strong unequal spurs, horny and acute at the apex*; in the hinder there is a pair also a little above the apex, one spur in each being very long (8 †): tarsi *5-jointed, spined beneath, hinder pair longer than the antennæ, basal joint exceedingly long*: claws and pulvilli *small.*

Larvæ with 6 pectoral, 8 abdominal and 2 anal feet, the tail short and incurved.

NERII Linn.—Curt. Guide, Gen. 785^b.

Green, more or less tinged with olive, and marbled with pink, ochre and brown; antennæ yellow-white above; sides of the thorax, base of the abdomen, back of the terminal, and sides of the penultimate segments, brown: superior wings with the base green, having an ochreous spot close to the thorax bearing a green dot; a rosy space crosses the middle obliquely, variegated with several dark green stripes, with the apex and posterior angle of the same colour: inferior wings blackish at the base, pale next the body, bounded by a curved black stripe, and a pale transverse waved line, with a broader dark green stripe on the external margin.

In the Cabinets of Mr. Dale and Mr. Priaulx.

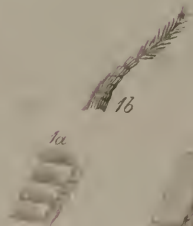
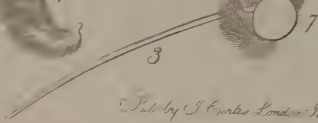
THE appearance of several hundreds of this beautiful caterpillar in France in 1835, caused quite a sensation amongst the naturalists of that country. These larvæ were found from the

15th of August to the middle of September, but in the south-east they were full-grown in June; they were observed as far north as Amiens, and in abundance at Epernay by M. Paris, who had discovered some eggs already hatched in 1833: at Gison, in the department of the Eure, M. Passy detected 35 feeding upon the Lesser Periwinkle, *Vinca minor*. No doubt is entertained in France that the strong and continued south winds in 1834 brought the perfect insects from Africa, which being carried to the north, they there deposited their eggs, and consequently the larvæ became abundant the following year. As this accords with an opinion I long ago expressed in accounting for the irregular appearance of some of our rarest Papiliones, I readily subscribe to it; nevertheless I think that other causes may at the same time be in action: for instance, favourable circumstances might have contributed to an excessive multiplication in their native soil, which I believe to be the impulse that leads insects to migrate, by which two fatal results are avoided, the destruction of the plants on which they feed, and the consequent annihilation of their own species. I suspect that the *D. Nerii* is found to the extreme east, probably as far as China; it is common in the North of Italy even to Nice, and in 1819 the caterpillars were abundant in the departments of the Maine and Loire.

D. Nerii is undoubtedly closely allied to the true Sphinges, and whether it be right to make a genus of it may be questionable; there are however several exotic species that will group well with it: the caterpillar has a different character to Sphinx (pl. 195), the spiral maxillæ are very much shorter, and the inferior wings are somewhat lobed, as in *Deilephila*.

The caterpillar represented is from a highly-finished drawing by Mrs. Tayleur of Teignmouth, which was transmitted to me by Mr. Dale. It was found in Mrs. Mitchell's garden in August 1832, and sent to Mrs. Tayleur, but the person who took it handled it so roughly that it died in a few days. The larvæ, like the perfect insects, vary much in colour, and I have never seen the figures of any that had more than a double blue spot on each side of the thorax. The fine specimen of the Moth, which is a female, Mr. Leplastrier informed me was taken by a poor man the latter end of September 1834, near the pier at Dover, and was brought to him alive. Dr. Bromfield states, in a letter to me from Southampton, "that Mr. Ingram, a nurseryman, took a fine specimen of *S. Nerii* about four years ago, near Netley or Marchwood, in August or September, and after having had it in his possession two years, he gave it to Mr. N. M. Priaux of this place, where I saw it some time since."

Vinca minor having been published in pl. 112, the Greater Periwinkle, *Vinca major*, is now added to the Plate.



Printed by J. G. Fisher, London, 1841.

SPHINX CAROLINA. (*Carolina*)

The Tobacco Hawk Moth.

ORDER Lepidoptera. FAM. Sphingidæ Lat.

Type of the Genus Sphinx Ligustri Linn.

SPHINX Linn., Fab., Lat., Haw., Och.—Spectrum Scop.—Eumorphæ Hüb.

Antennæ inserted close to the eyes, towards the back of the head covered with scales above, more robust and thickened in the middle in the *males*, each joint producing a row of cilia on the underside (fig. 1, a), the apex attenuated uncinated and terminated by a long seta, producing long slender scales (1, b): thickly clothed beneath with very short hair in the *females* (2).

Labrum very short.*Mandibles* remote ciliated internally.*Maxillæ* convoluted, very long, horny and slender (3, a portion only).*Labial Palpi* porrected obliquely, contiguous at their apex, robust, obtuse, densely clothed with hair (4); 3-jointed, basal joint the longest, curved upward, 2nd large oval, 3rd minute nearly obsolete (4 a).

Head *subtrigonate*. Eyes *globose*. Abdomen *conical, not tufted at the apex*. Wings *deflexed in repose, superior lanceolate, the lower ones having a hook or catch at the exterior margin to retain those above*. Cilia *distinct*. Claws *hooked, very apparent*.

Larvæ with 6 pectoral, 8 abdominal and 2 anal feet, the horn incurved.

Pupæ sometimes with the proboscis detached, forming an arch.

CAROLINA Linn. Syst. Nat. 2. 798. 7.—Smith and Abbot, v. 1. p. 65. tab. 33.

Brown freckled with white. Antennæ pale and dull ochraceous. Thorax with a black tuft of scales on each side behind. Abdomen with 5 or 6 large orange spots down each side surrounded with dark brown, the spots decreasing in size to the apex. Superior wings variegated with whitish and dark brown waved and dentated strigæ; a white spot margined with black, in the middle of the wing towards the costa. Inferior wings dirty white and black towards the base, a dirty white fascia joining a black interrupted one next to the posterior margin. Cilia spotted alternately whitish and brown.

In the Cabinet of the Author.

THE great length of the proboscis will not always distinguish the true *Sphinx* from *Deilephila* (pl. 3.); the antennæ however are much longer, and never clavate as they generally are in the

males of the latter; and their uncinated apex is very different; the larvæ also of *Deilephila* afford a distinct character in the singular power they possess of elongating (like a Leech) the anterior portion of their bodies.

The following species of this fine genus are recorded as British.

1. *S. Pinastri* *Linn.*—*Don.* 9. 296.—*Sepp.* v. 1. t. 5.—June: Trunks of Pines, Colney Hatch near London, and Ravelston wood near Edinburgh.

2. *S. Ligustri* *L.*—*Don.* 8. 284.—*Sepp.* v. 1. t. 3 and 4. End of June: Gardens, on Privet, Lilac, Elder, Ash, &c.

3. *S. Convolvuli* *L.*—*Don.* 7. 228 and 229.—Middle and end of September and October: several in Norfolk in 1811. A pair were taken last year by Mr. C. J. Thompson, flying about the Marvel of Peru, at Fulham; and others were captured at the garden of the Horticultural Society.

4. *S. Druræi* *Don.* 14. 469.—Taken near London about fifty years since, and carried alive to the late Mr. Drury.

5. *S. 5-maculatus* *Harv.* 59. 3.—Mr. Drury possessed a specimen, and Mr. Haworth has another, both taken near the Water Works at Chelsea; and Mr. Atkinson of Leeds showed me a beautiful one, bred from the Caterpillar in that neighbourhood by Mr. Wilson.

6. *S. Carolina.* A pair were taken by Mr. Thompson (a friend of Mr. Plastead's), the 28th August 1796, at West Cowes, Isle of Wight, which we are so fortunate as to possess. The female figured is of the natural size; but the other one expands five inches. In Mr. Vigors's Cabinet is a specimen of this or the last, which was certainly found alive in this country also.

As the Caterpillar of our insect (a figure of which is given, as well as the following extract, from Dr. Smith's *Insects of Georgia*) feeds upon the *Potatoe*, its appearance in this country is easily accounted for. "It feeds (says Mr. Abbot) upon Tobacco, Irish Potatoes (*Solanum tuberosum* ?), Red Pepper (*Capsicum* ?), &c. It went into the ground June 19th, and came out 15th July; another went in the 8th July, and came out 1st August. The Caterpillar is a great nuisance to the plantations of tobacco, the cultivators being obliged to pick them carefully off the young plants. The Moth is very commonly seen in an evening, sucking the James-town weed (*Mirabilis* ?) and Gourd blossoms, and continues breeding all the summer. There is reason to suspect two species of this fly; at least a great variety of colours is observable in both sexes."

The Caterpillar so much resembles that of *S. Ligustri*, that it might easily be passed by for it, although many differences are visible on comparison, particularly the absence of the lilac stripes, which add so greatly to the beauty of the larva of the Privet Sphinx.



Illustration of the caterpillar and moth

ACHERONTIA ATROPOS.

The Death's-head Hawk-moth or Bee-tiger.

ORDER Lepidoptera. FAM. Sphingidæ.

Type of the Genus Sphinx Atropos Linn.

ACHERONTIA Och., Lat. Sphinx Linn., Fab., Lat., Haw. Spectrum Scop.

Antennæ inserted close to the eyes at the back part of the head, scarcely fusiform, subprismatic, more robust in the male than female, uncinated, covered with scales above, and ciliated with fascicles of hair beneath in the males (fig. 1 a) : basal joint robust hairy, the remainder short transverse, terminal joints forming a hook terminated by a long setaceous seta covered with hairs (1 b).

Labrum none.*Mandibles* remote ciliated.

Maxillæ spiral, short, horny, robust, hairy beneath at the base, composed of numerous transverse rings, having a few rows of punctures largest towards the apex (3).

Labial Palpi 2, not porrected, lying close to the head, densely covered with hair on the outside, naked inside, the 2nd joint being hollow and partially covered by a thick regular row of hairs (4) ; 3-jointed, basal joint curved, 2nd dilated ovate, convex externally, 3rd small obtuse, with a deep fovea on the outer side (4 a).

Head, thorax, abdomen and legs densely covered with short pile.

Wings deflexed in repose, velvety, the lower ones having a hook or catch at the exterior edge to retain those above. Cilia very short.

Claws strong very distinct.

Caterpillars with 6 pectoral, 8 abdominal and 2 anal feet, the horn tuberculated, curved at the apex.

ATROPOS Linn. Syst. Nat. t. 2. p. 799. n. 9. Haw. p. 56. n. 1.

Antennæ and proboscis blackish, the apex of the former white. Head and thorax cinereous black, the latter having an orange mark resembling the front view of a cranium. Abdomen black, grayish down the back, with 5 or 6 orange spots on each side. Superior wings black, variegated with ferruginous minutely spotted with white, having several black transverse interrupted waved lines, one near the base and two others nearer the apex ochraceous, and a spot towards the middle of the same colour : inferior wings orange with 2 black indented fasciæ parallel to, but not touching, the margin.

In the Author's and other Cabinets.

THE common occurrence of the caterpillars of the Death's-head Moth during the last 2 or 3 years has been universally noticed, and various accounts have appeared in our journals describing their size and beauty; but so many of them perish in the chrysalis, that the moth was less abundant. The beautiful male in the plate was presented by my valued and sincere friend Moses Haughton, Esq.: it is much smaller than many females, some of which are nearly 6 inches when expanded, being the largest of European insects. The caterpillars feed upon the flowers and leaves of the Potatoe and upon the Jasmine, and it is also said upon the Hemp, Elder, and Woody Nightshade (pl. 102); concealing themselves during the day beneath the leaves and under the ground, and coming out only in the evening to feed, by which means they are protected from the piercing rays of the sun and from the attacks of the *Ichneumonidæ*: towards the end of summer (especially in September) they are full fed, when they bury themselves and become pupæ. One of these, which I had in my hand just before the moth hatched, ejected some moisture from 2 long spiraculæ over the anterior scales of the thorax, through which it appeared to breathe; and when this magnificent insect burst into life, its antennæ and limbs were enveloped in a fine membrane resembling tissue-paper, which prevented them from adhering, and dropped off as they unfolded: the wings, as usual, were not larger than one's nail, but he speedily placed himself so that they hung down, by which means the vessels were immediately injected with fluid or air, and in 2 hours they were perfectly expanded.

The moths are found in September, but more generally in October: they are not easily injured, and from the peculiar sound they emit (faintly resembling the squeaking of a mouse, and probably performed by the palpi from the curious structure on the internal side of the 2nd joint), as well as from the death's head upon the thorax, they were formerly looked upon as "the messengers of pestilence and of death." They are sometimes found in houses and upon the trunks of trees; and in Mr. Hatchet's fine collection are several specimens that were captured in a very singular way:—a vessel was lying at anchor off the coast of Devon, when a number of these *Sphinges* came to a lanthorn on board, and about a dozen of them were knocked down by the sailors.

I have scarcely room to add, that the velvety clothing, the shortness of the proboscis of our insect (which in *Sphinx* is as long as the body), and the different character of the caterpillar, particularly the tail, fully bear out Ochseneimer in establishing it as a genus; and we are surprised it has not been more generally adopted.



Pl. by G. C. Davis, Jan. 11, 1884

SMERINTHUS OCELLATUS.

The eyed Hawk-moth.

ORDER Lepidoptera. . . FAM. Sphingidæ.

Type of the Genus, Sphinx ocellata Linn.

SMERINTHUS *Lat., Goda., Curt.—Laothœ Fab.—Spectrum Scop.—Amorpha Hüb.—Sphinx Linn., &c.*

Antennæ inserted at the back part of the head, above the eyes, somewhat prismatic and tapering both to the base and apex which is hooked; slender and simply covered with scales in the female, considerably stouter and beautifully pubescent in the male, each joint producing a fasciculus or brush of hairs on two sides (1, *a*, a portion of the middle, *b* the apex).

Mandibles horny and ciliated.

Maxillæ small, slender and not longer than the palpi, formed of 2 strap-shaped filaments, lanceolate at the apex (3).

Labial Palpi short, meeting at the apex, curved nearly vertically, densely clothed with hairy scales, triarticulate, basal joint subclavate, 2nd long and very stout, attenuated to the apex, 3rd small subconic, spiny or bristly at the apex (4 and 4 *a*).

Head *small, short and obtuse*: eyes *not large* (7, *the head in profile*).

Thorax *robust and globose*. Abdomen *short, stout and conical*.

Wings *nearly horizontal and forming a triangle in repose, the inferior projecting beyond the upper margin of the superior, which are acute at the apex, as well as at the posterior angle, which is produced and the margin slightly sinuated or dentated*: inferior wings *small, subovate and sometimes dentated*. Legs *robust*: tibiæ, *anterior short and densely clothed with scales, the others clavate and spurred at the apex*: tarsi *5-jointed, basal joint long*: claws *small, strong, curved and acute*: pulvilli *distinct*.

Larvæ *with 6 pectoral, 8 abdominal and 2 anal feet*; *the head is cordate or conical, and the tail short and stiff*.

Pupæ *buried in the earth*.

OCELLATUS *Linn.—Curt. Guide, Gen. 788. 1.—Salicis Hüb.*

In the Author's and other Cabinets.

THE Caterpillars of these fine Sphingidæ considerably resemble those of Sphinx and Acherontia, but they are hard and shagreened, and the head is more or less triangular. The short proboscis of the perfect insect will distinguish it from the rest of the family, excepting Acherontia (in which it is very horny) and Trochilium, with which it cannot be confounded. The Smerinthi are seldom seen on the wing, but I have once or twice caught them flying in the evening; they are sluggish, and fly more like the Bombycidæ than the Sphingidæ: I believe they are short lived, and probably, from the form of their maxillæ, do not suck the juices of flowers like their congeners.

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Dr. Abbot and Mr. Dale have observed that the Larvæ lie under ground seven days before they change to Pupæ. *S. Quercus* is the only European *Smerinthus* that is not found in England.

1. *S. ocellatus* Linn.—*Curt. Brit. Ent. pl.* 482. ♀.—*Don.* 8, 269.—*Wood, pl.* 4. *f.* 7.

Superior wings with the posterior margin but slightly undulated. Rosy, variegated with brown, a chocolate oval spot on the thorax; base of the under wings fine rose colour with a large black spot at the anal angle, bearing an azure ocellus.

The Caterpillar is full grown the end of August; it feeds on the Sallow, Willow, Apple and Sloe; also on the Peach and Almond in France. The Moth appears the end of May, and is distributed through the country from Northumberland to Devonshire.

2. *S. Populi* L.—*Don.* 7. 241.—*Wood, pl.* 4. *f.* 9.

All the wings denticulate, especially in the male; bright grey or pale cinereous, variegated with brown, superior wings with a white spot on the disc, inferior brick-colour at the base.

Caterpillar found the end of August and middle of September on Poplar, Asp and Willow: Moth the end of June, middle of August and rarely in September throughout England. Mr. Dale has a very large and light var. from Capt. Blomer, and he observed one in Mr. Leplastrier's collection which had no red at the base of the under wings; it was found near Dover. It is very remarkable that several hermaphrodite specimens of this Moth have been discovered; a very fine one was presented to me by C. K. Sheridan, Esq., in which the wings, antennæ and legs on the right are male, and those on the left female, as perfectly as if a male and female had been divided lengthwise vertically, and the opposite halves of the two sexes united!

3. *S. Tiliæ* L.—*Don.* 10. 325.—*Wood, pl.* 4. *f.* 8.

Superior wings deeply and irregularly excised at the posterior margin: olive green; thorax with a pale lobe from the base towards the head: superior wings more or less rosy at the disc and towards the base, with an oblique olive green fascia across the middle, lobed externally and frequently divided; inferior wings black at the anal angle, diffused in an oblique ray.

Caterpillar middle of August on Lime and Elm-trees; it is said also to feed upon the Alder, Birch and Oak. Imago the middle and end of May and occasionally in July and August. Not uncommon round London and I believe wherever Lime-trees are plentiful, but Mr. Dale has only taken one specimen in Dorset. It is a very variable species, and the same gentleman has a curious variety with the upper wings dissimilar, and there are two in the British Museum exhibiting the same differences.



*TROCHILIUM BEMBECIFORME.

The lunar Hornet-moth.

**TROCHILIUM APIFORME.

The Hornet-moth.

ORDER Lepidoptera. FAM. Spingidæ. *Sphingidæ**Type of the Genus, Sphinx apiformis Linn.*TROCHILIUM Scop., *Curt. Guide, Gen.* 789.—Ægeria Fab., *Sam.*—Sesia Och., *Goda.*—Sphinx Linn., *Hüb., Haw.*

Antennæ inserted close to the eyes, on each side of the head, rather short and thick, slender at the base, rather abruptly pointed at the apex; more robust and developed in the male, being strongly pectinated on the inside; composed of numerous transverse joints, clothed with scales above, terminal joint small, slender and subovate, producing several long bristles (1, the apical portion).

Maxillæ composed of 2 flat lobes, not longer than the Palpi (3). *Labial palpi* long, curved upward obliquely, densely clothed with scales, especially on the underside, the terminal joint being distinct (4); triarticulate, basal joint short and robust, 2nd very long, 3rd slender, as long as the 1st, subovate at the apex (4 a).

Male smaller than the female. Head small and short, the crown tufted.

Eyes long and oval. *Ocelli* 2. *Thorax* large and smooth. *Wings* transparent rounded, distinctly ciliated. *Abdomen* long, robust, cylindrical and conical, slightly tufted at the apex in the males. *Legs* stout. *Thighs* short. *Tibiæ*; anterior very short, posterior long, densely clothed with hairy scales, spurred at and above the apex. *Tarsi* 5-jointed, basal joint long. *Claws* minute.

Larvæ fleshy, depressed, whitish, with a brown head and slightly pubescent, with 6 pectoral, 8 abdominal, and 2 anal feet.

Pupæ with the segments serrated, enclosed in a cocoon formed of wood.

THE genus *Trochilium* is well distinguished from *Ægeria* (pl. 53) by the shortness of the maxillæ, and the males only have a small tuft at the apex of the abdomen. An excellent paper on these insects was published in 1797 in the Linnæan Transactions, yet many authors have since confounded the two species, or have overlooked one of them, and consequently great confusion has been caused by the misapplication of the names: with a view of preventing further mistakes, I have figured, and shall now describe both the species.

1. *T. bembeciforme* Hüb. t. 20. f. 98.—*Och.* 2. 126.—*Curt. B. E.* pl. 372. **fem.*—*crabroniformis* Linn. *Trans.* 3. tab. 1. f. 6-10.—*Haw.* 69. 18.

Dark brown, with a greyish bloom: antennæ blueish black, castaneous beneath in the male: face silvery white; crown of the head hoary in the female: palpi, anterior margin of thorax, and 2 patches behind, deep yellow: abdomen deep yellow, orange at the apex, the 2 basal segments dark brown, the margins of the 3 or 4 following of the same colour, the 4th ferruginous at the base: wings pale yellowish, the costa and transverse nervure orange-brown, the interior margin of the same colour, scarlet at the base, with a black spot: nervures and cilia ochreous brown: legs yellow, clouded with orange and scarlet, underside of the thighs brown.

Whether Hübner's name has the right of priority I am unable to say; but the *S. crabroniformis* of Wien. *Verz.*, and of Hübner being synonymous with *S. apiformis*, and Fabricius having distinguished another clear winged Sphinx by the former name, it is evident that employing Hübner's appellation for this species will stop further confusion; and in so doing I am following the example of Ochseneimer.

“The larva feeds on the wood of the Sallow (*Salix Capræa*), in the heart of which it spins itself up in November, but does not change to a pupa till May following. The fly comes out in the middle of July.” *Lewin.* It has been taken at Darent, Kent, in Norfolk, Suffolk, and near Newcastle.

2. *T. apiforme* Linn. *F. S.* 289. 1093.—*Linn. Trans.* 3. t. 1. f. 1-5.—*Curt. B. E. fig.* ***fem.*—*crabroniformis* Wien. *Verz.*—Hüb.—*Tenebrioniformis* Hüb.—*Esp.*—*var.*

Bluish-black: antennæ ferruginous beneath in both sexes: face shining whitish: palpi and head deep yellow: thorax dull castaneous on the crown, anterior margin purplish; a large yellow triangular spot on each shoulder, and yellowish ochre on each side the scutellum: abdomen bright and deep yellow, orange at the apex, 1st and 2nd joints black, excepting the base of the latter, 3rd, 5th, and 6th margined with black; 4th annulation black, reddish brown at the base: wings stained yellow, the costa broad, ochreous-brown, transverse nervure and interior margin ochreous-orange, the latter with a black spot at the base: nervures and cilia fuscous: legs orange clouded with ferruginous: thighs brown beneath, the posterior and their coxæ bright yellow.

The larva feeds under the bark of poplar and aspen trees, near the bottom; changes to pupa in April; the fly appears in June, and is sometimes very abundant at Wanstead, Essex, at Costessy, Norfolk, &c.

The Plant is *Cerastium viscosum* (Narrow-leaved Mouse-ear).



of Macleay Pl. 1844

Eryngium maritimum. (Poiret)



Robert Hartley London Jan 1 1825

(Sesia) 53.

ÆGERIA ICHNEUMONIFORMIS.

Genus I. 1841 p. 13/4

The Six-belted Clear-wing.

ORDER Lepidoptera. FAM. Zygænides *Lat.* Zygænidae *Leach.* *Sesiidae**Type of the Genus Sphinx culiciformis Linn.*ÆGERIA *Fab., Leach.* Sesia *Fab., Lat., Lasp.* Trochilium *Scop.*
Sphinx *Linn.**Antennæ* composed of numerous joints (about 30), 1st large, cylindrical, following short; very slender at the base, gradually increasing in size nearly to the apex, which is terminated by a small slender joint, from which arises a tuft or plume (fig. 1.); covered with scales and strongly ciliated in the males. (2.)*Labrum* and *Mandibles* } attached to the clypeus.*Maxillæ* long, slender, spiral.*Labial Palpi* longer than the head, divaricating (7. a.) acuminate reflexed, thickly covered with scales and long hairs, the terminal joint being less clothed than the rest (4.); 3-jointed, 1st joint small, 2nd long, slightly attenuated, 3rd shorter than the 2nd, and more slender, attenuated. (4. a.)*Clypeus* convex covered with close flat scales. *Eyes* distant. *Ocelli* 2, placed near to the eyes on the crown of the head (7. b.) *Abdomen* cylindrical, composed of 8 segments, terminated by a beard more or less developed, trilobed. *Feet*, anterior the longest, posterior the shortest. *Tibiæ* spined. *Tarsi* 5-jointed, terminal joint with very minute claws. *Wings* generally transparent, strongly ciliated.ICHNEUMONIFORMIS *Fab. Ent. Syst. t. 3. pars 1. p. 385. n. 22. Lasp.*
peyres' Sesiæ Europææ, p. 16. n. 9. f. 3. & 4. Vespiformis Haw.
*Lep. Brit. p. 70. n. 23.*Greenish black. *Antennæ* towards the centre above ochraceous, furruginous beneath, except 2 or 3 joints at the base and a portion of the apex which are black. *Clypeus*, posterior margin of head, 2 spots at the base of the wings, sides of the thorax, 5 or 6 bands across the abdomen at nearly equal distances, and 2 longitudinal tufts at the apex yellow. *Palpi* and legs orange, the former having a few blackish scales; the latter with the thighs, base of tibiæ and a spot near their extremities black. *Wings* transparent; the costal margin, a lunulated spot near the disk, ciliæ and margin of wings, nerves and a triangular spot on the margin of the inferior wings, orange-brown; posterior margin and apex of superior wings orange, the centre of the latter being transparent. The male differs from the female in having a more slender body with 7 bands; antennæ above with a very small portion of the centre pale ochraceous.*In the Cabinets of Mr. Haworth and the Author.*

THE species composing the genus *Egeria* having been long confounded, I shall here endeavour to settle their names and synonyms to the best of my ability, in which I have been much assisted by Laspeyres's valuable *Monograph* upon the genus.

1. *Æ. Asiliformis* F.; *Æstriformis* Kirby and Spence's Int. to Ent. vol. 1. pl. 3. f. 2. (this species having opaque superior wings will form a division).—2. *Spheciformis* F.—3. *Ichneumoniformis* F. (tab. 53. Nob.); *Vespiformis* Haw.—4. *Vespiformis* L. *mas.*: *Tenthrediniformis* Hub.; *Cynipiformis* Haw. *fem.*: *Æstriformis* Haw.; *chrysorrhæa* Don. v. 4. t. 116.—5. *Chrysidiformis* Vill., Haw.—6. *Tipuliformis* L., Haw., Don. v. 2. t. 52.—7. *Formiciformis* Esper., Vill., Lasp., Haw.—8. *Mutilliformis* Lasp.; *Culiciformis* Hub., Haw.; *zonata* Don. v. 6. t. 195.—9. *Culiciformis* L., Lasp.; *Stomoxiformis* Hub.?

Egeria Ichneumoniformis is one of the rarest of our British species; and it is a little singular that all the specimens I have yet examined have been females. It appears to be attached to the coast—Mr. Millard having taken one near Bristol; Mr. Skrimshire took one at Creak near the coast of Norfolk 1823; and the beginning of September of the same year I captured a female resting upon a large mass of rock on the beach near Hastings. Although there is no appearance of yellow hairs in the beard of the abdomen in Laspeyres's figures, he mentions a few in his description;—it is only in the most perfect specimens that they are very evident: the yellow bands of the abdomen also in wasted specimens become nearly white, and the orange legs yellow; which will reconcile in a great measure the differences in Fabricius's and other descriptions; and there are evident proofs throughout Laspeyres's accurate description of its being taken from a faded and worn specimen.

The most singular characters of our genus are the *ocelli* or little eyes, which although common to the orders Trichoptera, Neuroptera, Hymenoptera and Diptera, one would not expect to find amongst the Lepidoptera: it is to the accurate and learned De Geer that we are indebted for this discovery. Savigny long since proved an analogy between the Lepidoptera and the Trichoptera, from a resemblance in the form and situation of the labrum and mandibles: and in the ocelli we have another proof of their affinity; for not only are they placed very much in the same situation, but they agree also in number, being only two; whereas in the other orders there are three, placed more or less triangularly.

The larvæ have sixteen feet, are pale and fleshy; they live upon the bark, pith and internal substance of trees, amongst which are the poplar, willow, alder, and currant: the imago delights to fly in the sunshine between the hours of nine and three during the months of May, June and July, at which time they are very lively and fly with wonderful velocity, alighting upon flowers from which they extract honey.

Eryngium maritimum (Sea Eryngo, or Sea Holly) is figured.

"*British Insects*." "Sea Eryngo." p. 177

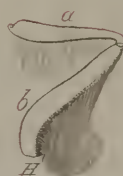
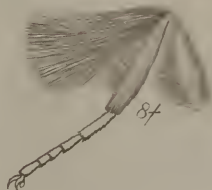
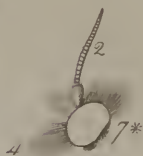


Fig. 1. Larva of the moth, and the pupa.

HEPIALUS SYLVINUS.

The Tawny and Brown Swift.

ORDER Lepidoptera. FAM. Bombycidæ *Lat., Leach.*

Type of the Genus Noctua Humuli Linn.

HEPIALUS *Fab., Lat., Haw., Leach.*—Hepiolus *Och.*—Bombyx *Hüb.*
—Phalæna (noctua) *Linn.*

Antennæ inserted between the eyes, in front of the head, setaceous, very short, composed of about 20 joints of which the basal one is the most robust (fig. 2); the males of some having a single row of pectinations, the branches ciliated (1).

Labrum
Mandibles and } none.
Maxillæ

Palpi wanting, a tuft of hair only arising where the labial palpi are usually attached (4).

Males smaller than the females. Head small. Eyes small, but covering the side of the head (7*). Thorax woolly. Abdomen rather long, slightly attenuated and tufted in the males; more robust in the females. Wings very much deflexed when at rest, rather long and elliptic. Legs, anterior pair the largest, posterior the smallest. Tibiæ, anterior having no spine on the internal side; hinder not spurred but producing very long hair (8+), and dilated in some males (H,b). Tarsi 5-jointed, sometimes wanting in the posterior pair of the males (H). Claws long bent. Pulvilli distinct (8+, hind leg of H. Humuli.—H the same of H. Hectus: a, the thigh; b, the tibia; tarsus none).

Larvæ fleshy, naked, with 6 pectoral, 8 abdominal and 2 anal feet.

Pupæ with the segments denticulated on the sides.

SYLVINUS *Linn. Faun. Suec. 2. 306. 1151.*—Crux *Fab., mas.*—Angulum *Haw., mas.*—Hamma *Ill.*—Lupulinus *Hüb., Haw., fem.*

Male fulvous, antennæ pectinated, thorax and legs inclining to castaneous; superior wings variegated with chesnut, an oblique sinuated white line near the base united at right angles to another at the interior margin, which latter terminates near the apex; a triangular fuscous spot near the disk; the costa variegated with fuscous and an indented line of the same colour at the base of the cilia: inferior wings and abdomen fuscous, the apex of the latter and the cilia pale castaneous.

Female brown, antennæ serrated, ochraceous; superior wings variegated with pale brown and clouded next the costa; a large space next the base dirty white; an oblique irregular moniliform row of spots somewhat parallel to the posterior margin surrounded with dirty white, and another fuscous row between it and the cilia; a large oblong fuscous spot in the disk margined with dirty white.

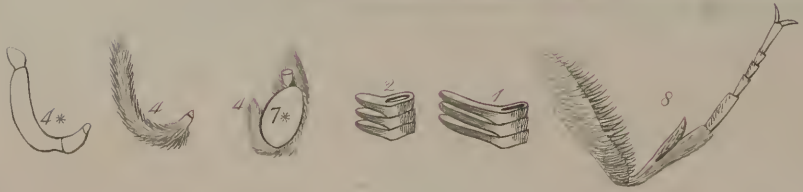
In the Author's and other Cabinets.

THE *Hepiali* have generally been considered as the connecting link of the Sphingidæ and Bombycidæ; to some of the Zygænidæ the larvæ are very analogous in habit as well as economy, and the passage from *Hepialus* by means of *Cossus* and *Zeuzera* to *Saturnia*, as proposed by Latreille in his *Considérations Générales*, is we think most admirable. Our genus will admit of divisions, since the antennæ of the males are simple in some species, and in others they are pectinated; the hinder legs of the males of *H. Humuli* are beautifully ornamented with long hair as represented at figure 8†, which may assist them in their singular undulating flight, and those of the same sex of *H. Hectus*, which have no feet (vide fig. H), have a dilated clavate tibia furnished with long hairy scales, which enables them most probably to perform their curious vacillating evolutions, very naturally compared to the pendulum of a clock in motion. These insects are rendered still more remarkable by being entirely destitute of trophi; for although Fabricius has assigned to them palpi and the rudiments of a tongue in his generic characters, we can detect neither.

The genus contains the following British species:

1. *H. Humuli* Linn.—Don. 8. 274. *mas.* & *fem.*—Appears the middle of June, in grassy places; the larvæ are found in August feeding upon the roots of *Humulus Lupulus*, the common Hop.
2. *Lupulinus* Linn.—Fab., *fem.*—Hüb., Och.—obliquus Fab., *mas.*—Coq. t. 7. f. 6.—Harris, pl. 22. f. 1.—Haw. Flina Hüb., *fem.*—fuscus & nebulosus Haw.—End of May, meadows.
3. *Velleda* Esp., Hüb., Haw.—Mappa Don. 10. 360. 3.—June: Darent Wood, Kent; Ambleside, and Stirling.
4. *arnus* Fab., Och., Hüb. *mas.*—Jodutta F. ? Hüb., *fem.*—Near Stirling Castle, and outside a wood by Ambleside; in company with the last.
5. *sylvinus* Linn., &c.—Found about weedy banks in August and September:—there can no longer be any doubt that the two insects figured are the sexes, since they are not only considered as such on the continent, but they have been repeatedly taken in pairs in this country.
6. *Hectus* Linn.—Fab.—Don. 8. 274. *mas.*—Schæf. Icon. 115. 1. & 2.—Jodutta Schr., Esp.—Found in open places in woods, the middle of June.

Alchemilla vulgaris (Common Lady's Mantle) is represented in the plate.



Del. by J. Curtis London Mar. 4. 1825

Bull. II Pl. 28 f. 19

COSSUS LIGNIPERDA.

The Goat Moth.

ORDER Lepidoptera. FAM. Bombycidæ Lat., Leach.

Type of the Genus Bombyx Cossus Linn.

Cossus Fab., Lat. Bombyx Linn., Haw.

Antennæ pubescent, covered with scales above, setaceous, composed of numerous joints, pectinated internally, pectinations much stronger in the male (fig. 1) than in the female (2), 1st joint large, cup-shaped.

Labrum }
Mandibles } none.
Maxillæ }

Palpi 2, erect, thickly covered with bristly scales, 3-jointed, 1st joint short, 2nd long, curved upward from the base, 3rd small, rhomboidal (4 and 4*).

Head vertical, with a tuft of hair upon the crown (7). Thorax robust, not crested, with large scales covering the base of the superior wings. Abdomen robust, very hairy, obtuse in the male, somewhat acute in the female. Wings entire, deflexed when at rest, superior ones long, and larger than the inferior. Legs; anterior pair, with a compressed spine on the internal side of the tibiæ; 2nd pair with 2 spurs at the apex, posterior pair with 2 spurs also in the middle of the tibiæ. Tarsi 5-jointed, basal and terminal joints the longest. Claws simple (8 a fore leg).

Larvæ fleshy, naked, having only a few bristles; with 6 pectoral, 8 abdominal and 2 anal feet.

Pupæ with the segments denticulated on the sides; inclosed in a case formed of pieces of wood cemented by gluten.

LIGNIPERDA Fab. Ent. Syst. t. 3. pars 2. p. 3. n. 1. Cossus Linn. Syst. Nat. 2. 827. 63. Haw. Lep. Brit. p. 89. n. 14.

Head and middle of thorax rich brown, anterior part of latter ochraceous, posterior portion whitish with a transverse black fascia. Abdomen gray excepting at the base in the male; fuscous, each segment being bordered with pale yellowish gray in the female. Superior wings purplish and reddish brown, clouded with pale yellowish gray, having numerous irregular black transverse streaks and reticulations. Inferior wings brown, with more obscure reticulated markings, vanishing towards the base.

In the Author's and other Cabinets.

Few illustrated works upon this superb order are without figures of the grand and beautiful insect exhibited in the plate;

* Beauv. II p. 152. Darbey Ent. for. 570/6 cop. in Blanchard. 186/102

and if its magnitude and harmonious colouring have invited the skilful hand of the artist, its singular economy and remarkable structure have no less attracted the attention of the philosopher: the learned De Geer and celebrated Lyonnet have been eminently successful in their investigations of the structure of the caterpillars; and their dissections and descriptions being so ample and numerous, that it is in vain for me to attempt here to give any satisfactory account of them, I must refer the reader to those authors for the history of this extraordinary insect, observing that the plates that illustrate the work of the latter are amongst the most beautiful the graver ever produced, and that in the delineation of the insect our own countryman Harris has employed his pencil with the greatest success.

The imago of *Cossus ligniperda* is very inconstant in colour and markings, as a comparison of the beautiful variety of the female figured from Mr. Stephens's cabinet with those usually taken will prove. This variety was probably bred from a caterpillar that fed upon the oak, its usual food being the internal substance of poplars and willows, which I have known so completely pierced in every direction by these larvæ, which exist in that state three years, that the first high wind has broken them down: in other instances they have ascended the standards of young willow-trees, the pith of which has been entirely destroyed, and of course the destruction of the stem followed. They are met with occasionally in May, but most frequently in September, at which time the specimen figured was found. It spun up in a few days, after endeavouring to make its escape from the smooth vessel in which it was at first confined, by the ingenious method exhibited in the plate, forming a ladder of its web which enabled it to ascend even glass to any height: my attention was first called to the fact by my esteemed friend Henry Browne, Esq., of Norwich, although I found afterwards that it had been observed by Roësel. The caterpillars emit a most disagreeable scent; nevertheless it was the opinion of Ray and Linneus that they were a favourite dish of the Romans.

The perfect insects may be taken the end of June and July resting upon the trunks of those trees in which they have been perfected, and upon the bark of which the females deposit their eggs.

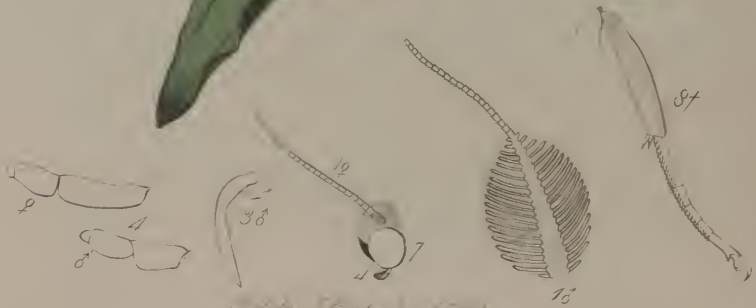


Illustration by [unclear]

ZEUZERA ÆSCULI.

The Wood Leopard Moth.

ORDER Lepidoptera.

FAM. Bombycidae Lat.

Type of the Genus, Noctua Æsculi Linn.

ZEUZERA Lat., Curt.—Hepialus Schr.—Cossus Fab.—Bombyx Hüb., Haw.—Phalæna Linn.

Antennæ inserted on the crown of the head, close to the eyes, shorter than the thorax, setaceous, the first 18 or 19 joints bipectinated in the male (1 ♂), the rays forming an oval, the following joints slender and pubescent: the basal joints woolly only in the female (1 ♀).

Maxillæ formed of 2 very short and broad lobes (3), a little longer in the male than in the female.

Labial palpi very small, projecting a little from the face (4), clothed with short rigid bristles, triarticulate, basal joint oblong, 2nd oval, narrower and rather shorter, 3rd small semiglobose (4 ♂): larger in the female, basal joint twice as long as the 2nd which is a little attenuated (♀).

Male smaller than the female. Head short and small: eyes globose.

Thorax oval and woolly. Abdomen stout, apex obtuse in the male, conical in the female: ovipositor, horny. Wings deflexed in repose, the margins entire; cilia exceedingly short and fine: superior ovate-lanceolate; inferior ovate, a little emarginate near the anal angle.

Legs moderate: tibiæ, anterior short and curved, with an internal basal spine, the others longer, with small spurs at the apex only: tarsi spiny beneath, 5-jointed, basal joint the longest, 5th rather long: claws strong and hooked (8 †, hind leg).

Larvæ naked, with 6 pectoral, 8 abdominal and 2 anal feet. Pupa inclosed in a cocoon formed of atoms of wood united with gluten, the abdominal segments with double rows of spines on each inclining backward.

ÆSCULI Linn.—Curt. Guide, Gen. 793. 1.—Pyrina Linn. Faun. Suec.

Yellowish white; antennæ and 6 large spots on the thorax black; abdomen banded with black, the apex dark green: superior wings with a large number of round, and long dark greenish blue spots between the ochreous nervures: the spots on the inferior wings smaller and lighter.

In the Author's and other Cabinets.

THE admirable manner in which every animal is adapted to the station it occupies in the universe, is one of the most astonishing facts that presents itself to the observation of man, and he has been indebted probably in no small degree to their skill for the direction of his mechanical powers in the common affairs of life. There is no class of animals that has

Descr. II 155. you can see more on our web page. 2nd, 3rd, 4th p. 167 (more of description etc.)

contributed more generally in this way than insects: the rowing of the Boat-fly, the diving of the Dytici, the spinning of the Caterpillar, the masonry of the Bees, the paper-making of the Wasps, and the boring of numerous tribes, are all arts practised by man. The Caterpillar of *Zeuzera Æsculi* is one of those which lives in timber: for the purpose of boring, it has the first thoracic segment horny above, the smoothness and strength of which enable it with greater facility to accomplish its object; the body is fleshy, yellow, and naked, and the apex is protected by a horny shield. These characters, however, will apply to numerous larvæ of totally different families, and this, I fear, will prove a great barrier to the formation of any arrangement of the Lepidoptera based entirely on their structure, however successfully such characters may be employed in many groups.

Z. Æsculi is undoubtedly closely allied to *Cossus* (Pl. 60), the œconomy of the larvæ is the same, and consequently they are considerably alike in form and structure; but on the other hand, the Imago of the former is more nearly related to that of *Stauropus* (Pl. 674), in the structure of the antennæ and of the trophi, yet nothing can be more dissimilar than the larvæ.

Mr. A. Mathews, who made a few observations on the œconomy of *Z. Æsculi*, states, that he discovered some saw-dust protruded from a small hole in a pear-tree; on removing the bark he found a cavity nearly a foot long, first descending a short space and then ascending and gradually approaching the centre of the tree, and at the extremity was the larva. The head was uppermost; it would therefore have to turn and possibly descend before it became a pupa; if not, the abdominal spines, like those of *Hepialus* and *Trochilium*, would enable it in this stage to remove to the aperture in the bark; yet how large moths make their exit through such small holes has often puzzled me, since their mouths cannot assist them, and the young caterpillars entering the tree as soon as they are hatched, the orifice must be very minute, if not altogether closed: perhaps before that period arrives, birds and even insects may enlarge the entrance through the bark, beneath which the cavity is large enough. The larvæ are long-lived, and the moths appear from the end of June to the end of August: they have occurred in St. James's Park and many other places in the vicinity of London, at Milton, Stilton, Cambridge, Norwich, Ipswich, Epping, Burghfield, Leamington, Andover, Dorset, Allsley, &c. The larva feeds on the wood of the apple, pear, lime, mountain-ash, horse-chestnut, walnut, ash, elm, beech, birch, hazel, oak and holly.

The plant is *Saponaria officinalis*, Soapwort, communicated by J. J. Bennet, Esq.

674



base of 11. 22/72

674.
STAUROPUS FAGI.
The Lobster Moth.

ORDER Lepidoptera. FAM. Bombycidae.

Type of the Genus, Bombyx Fagi Linn.

STAUROPUS *Germ., Curt.*—*Cerura Schr.*—*Harpyia Och.*—*Terasion Hüb.*—*Bombyx Linn., Hüb., Haw., Goda.*

Antennæ inserted on each side of the crown, above the eyes, rather short, setaceous, composed of numerous short joints, clothed with scales above, bipectinated three fourths of their length, in the male (1 ♂), the apical portion ciliated internally; the rays slender and ciliated: simple in the female, bristly externally, pubescent on the inside (1 ♀, the centre and apex).

Maxillæ rudimentary only, forming 2 minute lobes.

Labial palpi porrected obliquely, rather short, slender and hairy (4), triarticulate, 2 basal joints long and stout, 3rd small and suborbicular (a).

Head rather small, with 2 elevated rings of scales surrounding the base of the antennæ: eyes lateral and ovate (7). Thorax moderately stout, not crested. Abdomen linear in both sexes, with long thick woolly hairs at the apex and curving over in the female; 3 or 4 tufts of scales down the back of the basal joints, larger in the male. Wings very much deflexed in repose; superior narrow, elongate-ovate with a few raised tufts on the disc; inferior rather small, triangular-ovate; cilia equally long in all the wings. Legs short and very woolly; tibiæ with the hairs spreading on the sides, 4 posterior with a pair of short spurs at the apex: tarsi 5-jointed.

Larvæ naked, with 6 pectoral, 8 abdominal and 2 anal appendages, long slender and horny; 2nd and 3rd pairs of pectoral legs elongated and geniculated; apical portion of the abdomen incrassated and generally elevated in repose, as well as the head. Pupa inclosed in a close silken web, often between leaves.

FAGI *Linn.*—*Curt. Guide, Gen. 794. 1.*

Male griseous-grey, more or less with an ochreous tint; antennæ ferruginous; 3 or 4 black tufts down the back of the abdomen: superior wings with a sinuated brown striga near the base, ochreous on the inside, another crenated one a little beyond the middle with a suffused brown space between them and 2 or 3 indistinct grey tufts; a line of black spots parallel to and approaching the cilia, slightly raised and grey internally; inferior margin with a large dull red space; inferior wings darker, with a reddish tinge, the outer portion blackish, with 2 or 3 pale ochreous lunules united transversely at the margin, and a space of the same colour near the base. *Female* more uniformly grey, wanting the red in the upper wings, in which the black spots are larger, with a raised lunule on the disc: inferior wings not darker than the superior.

STAUROPUS FAGI is a moth of rather grave colouring, yet there is an agreeable harmony in the grey tints, which are enlivened in the male by the reddish antennæ and patches on the upper wings, as well as by the tasselled black line on the body.

* *Besca II, 223. Poeyade Bin S. E. F. 1867 p. 146/5*

The masculine antennæ, which are not pectinated to the apex, induced me to place this insect next to *Zeuzera*, and other affinities led me to connect it with the "prominent moths," and it certainly makes a near approach to *Notodonta trepida*; Ochseneimer however considers it so closely allied to *Cerura Vinula* that he has included them in one genus. If on the other hand we contemplate the Larva, which is one of the most extraordinary anomalies amongst insects, it will be extremely difficult to assign it to any situation, it is so totally different to every other animal of its kind; indeed so monstrous is its form that it has been called the *Lobster* caterpillar.

Germar, Leach, and Stephens have described the palpi as biarticulate, and in the "Illustrations" it is added that the "terminal joint is acute;" but they are distinctly *triararticulate*, and the terminal joint is *obtuse*.

A few years back this moth used to fetch as much as £5, but now it may be purchased for as many shillings, a difference arising in a great measure from the number of persons who are now engaged all over England in collecting insects for sale or exchange.

Captain Chawner, who found the Larva last summer, says in a letter to me, "When at rest I observed it assumed somewhat the attitude of the Sphingidæ, its long legs being drawn close up to the head, so as to become, comparatively speaking, scarcely apparent and perfectly free from the beech twig on which it was reposing; the whole Caterpillar was of a fawn-colour, assimilating perfectly with the tints of the half-dead beech leaves. The cocoon is of very peculiar texture, close woven and more resembling silver paper than any other material I can remember, perfectly pliant to the touch, but no doubt impervious to water."

One of the first insects I remember to have taken was a female of this moth; it was fluttering up paling under some lime trees near Norwich, the middle of June; and more than two centuries back Mouffet said the *Staphylinus* Caterpillar was common in Norfolk. The moth has been found from June the 15th to July the 7th at Epping, Birch and Bexley Woods; Tonbridge Wells; near Cheshunt, Herts; the New Forest; Hermitage, Dorset; near Bideford and High Bickington not uncommon, as well as in Nunbury Wood, Worcester. The males have been taken at Burghfield by the Rev. C. S. Bird, between 12 and 1 o'clock on very dark nights, by means of a lamp; they are generally smaller than the females, but Mr. Dale has one that expands three inches.

The Larva feeds on the oak, hazel, beech, lime, birch, alder, sloe, and willows; it has been found from the 11th of August to the 18th of September. For the admirable drawing of the Caterpillar I am indebted to Mr. J. Standish, Jun.; it is placed upon a twig of the beech, *Fagus sylvatica*, the moth being named after that tree.

the whole of the larva is white, the cocoon is brown, the pupa is white.



Phalaena ...

mus. 6 Pl. 33 17.4

PYGÆRA BUCEPHALA.

The Buff-tip Moth.

ORDER Lepidoptera. FAM. Bombycidae.

Type of the Genus, Ph. Bombyx? bucephala Linn.

PYGÆRA Och., Germ., Sam., Curt.—Laria Schr.—Melalopha Hüb.—
Bombyx Linn., Fab., Haw.

Antennæ somewhat approximating, being inserted on the crown of the head, rather short, setaceous, and composed of numerous joints, the basal one concealed by a long bundle of scales, the others producing an obtuse tooth beneath in the male, as well as a double fringe of curved hairs, (1, *a* the underside, *b* side view); simple and velvety only beneath in the female.

Maxillæ very short, composed of 2 curved flat attenuated lobes, slightly ciliated internally (3): *Palpi* minute globose, slightly peduncled, with 2 or 3 bristles at the apex (*a*).

Labial palpi short, densely clothed with scales (4), very horny, curved and 3-jointed, basal joint subclavate and a little longer than the 2nd, 3rd minute ovate (4 *a*).

The sexes scarcely varying in size. Head small, and nearly concealed, the face being flattened (7): eyes nearly orbicular and sunk under the Thorax, which is short, the scales forming dense tufts on the crown. Abdomen long, linear and cylindric, a little depressed and slightly bifid at the apex in the males. Wings cylindric in repose, being wound round the body; superior slightly denticulated and rounded at the apex; inferior much smaller and rounded. Legs short and very downy, anterior protracted in repose: thighs clothed beneath with woolly hairs: tibiæ similarly clothed outside, anterior with a large leathery, somewhat inflated lobe inside (8), the others with a pair of short spurs at the apex, the hinder tibiæ having a similar pair also below the middle, all armed with a claw at the apex (†): tarsi rather stout and 5-jointed, furnished with minute claws.

Larvæ nearly cylindric and hairy, with 6 pectoral, 8 abdominal, and 2 anal feet.

Pupæ buried in the earth, having 2 little spines at the apex.

BUCEPHALA Linn.—Curt. Guide, Gen. 795. 1.

Pale ochreous; head and thorax deeper, the latter surrounded by 2 curved bright brown lines reaching nearly to the scutellum, the portion behind them gray: abdomen dark and dull ochreous, the segments on the sides spotted with brown: superior wings silvery gray, the costal portion with a purplish brown tint, a black and reddish waved striga before, and another denticulated beyond the middle, frequently with a pale ovate spot on the disc and 3 indistinct strigæ across the middle; a large buff ovate spot at the apex, variegated with 3 or more darker arches; cilia rich ferruginous, with black crescents at the base and spotted with buff at the apex: inferior wings dusky next the abdomen and on the disc, with a pale indistinct waved stripe; cilia dotted with brown at the tips.

In the Author's and other Cabinets.

* Bucec 267

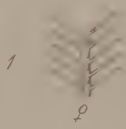
THIS singular insect is so closely allied to *Clostera*, *Hoff.*, that Ochseneimer includes both in his genus *Pygæra*; and as *P. bucephala* forms his last division of the genus, and does not agree with his characters, it would be necessary to give a new generic name to it, if *Clostera* had not been applied to the other portion. Mr. Children says, "Ochseneimer confesses that it is difficult to justify the placing the 6th species (*Bucephala*) with the rest of his *Pygæra*, since the setose antennæ of the females, the fore feet extended when at rest, and the mode of metamorphosis are opposed to that arrangement." It was the opinion of Godart that it was allied to the *Noctuidæ*, although he placed it with the *Bombycidæ*, following the example of other authors.

That the presence of maxillæ will not exclude it from the *Bombycidæ*, is evident from the *Ceruræ* having them, as shown in pl. 193, and in *Pygæra* they are more closely united and slightly spiral: the strongest evidence against its belonging to that family is the fact of the Larvæ burying themselves in the ground, like a *Noctua*, without forming any cocoon; yet this may justly be considered merely as an exception, since many *Noctuæ* spin webs and do not enter the earth, yet they are not considered *Bombycidæ*.

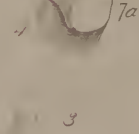
Pygæra has been said to be closely allied to *Cossus*, but excepting a slight similarity in the form of the joints of the antennæ in the males, and a little perhaps in the markings of the thorax, there is no resemblance whatever: it seems to be somewhat connected with *Stauropus*, and is very nearly related to *Notodonta*, and perhaps in some degree to *Cerura*, which rests with its fore legs porrected in the same manner as *Pygæra*.

The labial palpi are triarticulate, but Dr. Leach having described them as 2-jointed, the error has been repeated by others; and no one suspected that maxillary palpi existed in the *Bombycidæ* until those of *Cerura* were figured in this Work, although one *describer*, who could not discover 3 joints in the labial Palpi, speaks of "Palpi four" in *Cerura*, and "of the distinctions in the trophi which can only be observed by dissection," as if it had fallen to his lot to make the discovery.

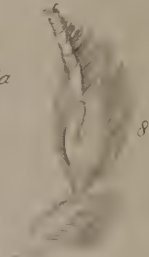
Our figure of the larva is from Hübner; when young they live in society and feed on the surface of the leaf in a very compact and curious way, as represented by Sepp, and when nearly full grown they do not leave the tree on which they were bred, if one may judge from the quantity of soil seen occasionally upon the ground; but when they are about to inhumate themselves, in the autumn, and the wind shakes them from their abodes, they are seen wandering on paling and the ground in every direction under alders, birch, chestnuts, elms, limes, maples, oaks and willows, on all of which they feed. The beautiful moth, which according to Godart smells of musk, hatches the following June, generally towards the end, and is abundant throughout the Kingdom.



17



3



715.

CLOSTERA ANACHORETA.

The scarce Chocolate-tip.

ORDER Lepidoptera.

FAM. Bombycidae.

Type of the Genus, Bombyx curtula Linn.

CLOSTERA Hoff., Curt.—Pygæra Och.—Bombyx Linn., Haw., Goda.

Antennæ very short, curved, inserted close to the back of the head, bipectinated, the rays long and hairy in the male (1 ♂) but decreasing in length to the apex, the base concealed by a ring of scales; much shorter in the female (♀), slightly pubescent internally, with a bristle at the apex of each.

Maxillæ very short, concealed by the palpi, formed of 2 distorted compressed broad lobes, curved and attenuated at the apex (3).

Labial palpi stout, directed obliquely or nearly vertically, densely scaly (4), triarticulate, basal joint cleaver-shaped, 2nd twice as long and nearly linear, 3rd minute oval (4a).

Head *very short, bent under the breast in repose: eyes large but very much concealed: (7a, the profile). Thorax quadrate, crested behind. Abdomen attenuated, the apex elevated when at rest, tufted and truncated, the tuft elongated and sometimes furcated in the male. Wings deflexed in repose, rather short; superior subtrigonate, truncated obliquely, the apex rounded; inferior trigonate, rounded: cilia short. Legs short and stout: tibiæ densely scaly, the anterior appearing dilated, with a stout internal spine (8); the others with small spurs at the apex, the hinder with a pair also a little above the apex: tarsi 5-jointed, anterior producing long scales on the outside, the others with the basal joint elongated, the following short: claws and pulvilli minute.*

Larvæ *hairy and tufted, with 6 pectoral, 8 abdominal and 2 anal feet. Pupæ inclosed in a web between the leaves of trees.*

ANACHORETA Vill.—Curt. Guide, Gen. 796. 2.

Cinereous lilac: crown of head and a ring round the base of the antennæ deep brown, as well as 3 large spots down the back of the thorax: superior wings with 4 transverse pale strigæ, 2 straight and oblique before the middle, 3rd flexuose and a little raised; apical spot large and brown with a lilac bloom towards the extremity, through which the 4th striga passes and forms a white broken line near the apex, with 3 orange freckled patches: towards the posterior margin is an irregular line of black spots, with 1 or 2 larger approaching the posterior angle: abdomen and inferior wings fuscous.

In the Cabinets of the British Museum.

THIS pretty little group seems to be allied to *Cerura* (pl. 193), and is supposed to be related to *Pygæra* (pl. 530). The short antennæ and shortish wings, with the peculiar spot at the apex

of the superior, characterize Clostera, of which the following species are natives of this country.

1. *curtula* Linn.—Wood, pl. 5. f. 12.—*anachoreta* Esp.

Reddish gray; head and thorax with the disc intense brown; superior wings with 4 whitish transverse lines and a large chocolate-coloured space at the apex.

Larvæ the end of September on poplars and willows; the moth appears the end of April on the trunks of those trees at Wanstead and in the neighbourhood of London. May, on Durdham Down in abundance, Mr. House; end of May, Clapham Park Wood, Bedfordshire, Mr. Dale, and Lyme Regis and Brightwell Bertis, Dorset.

2. *anachoreta* Vill.—Curt. Brit. Ent. pl. 715 ♂.—*curtula* Esp.

The larva, which is copied from Hübner, is found upon the different species of sallows and poplars from June to October. The moth appears in spring and summer near Paris, where it is common, although it is very rare in England; the only specimens I have seen being in the British Museum, one of which I have figured: they were taken near Salisbury by the late Mr. Spratt.

3. *reclusa* Esp.—Don. v. 4. pl. 124. & pl. 129. f. 4.—Wood, f. 10.

Superior wings cinereous, with 4 pale transverse anastomosing lines, and a white costal spot, with a large ferruginous spot at the apex: inferior wings fuscous.

Larvæ on the trembling poplar the end of September, and the moth the end of May on the trunks of that tree at Epping, Darent and Birch-woods, also at Burghfield, Berks, and near Dublin. I took the larvæ full grown on a willow in the Isle of Arran the beginning of August. Captain Blomer found them on the young shoots of the white poplar in June and July, and bred the moth in May and August; and Mr. Blunt detected the caterpillars under the bark of willows and poplars in Pembroke Hall Garden, Cambridge.

4. *suffusa* Step.—Ill. pl. 16. f. 1.

Larger: superior wings with the 3rd striga united obliquely with the 4th on the interior margin; inferior wings pale cinereous, with two transverse angulated fuscous strigæ.

It is not stated where this specimen was taken in the Illustrations.

Populus Tremula, the Aspen-tree, is figured with the insects.

739



Stenogramma

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NOTODONTA DROMEDARIUS.

The Iron Prominent.

ORDER Lepidoptera.

FAM. Bombycidae.

Type of the Genus, Bombyx Dromedarius, Linn.

NOTODONTA *Och.*, *Germ.*, *Curt.*—*Ptilodontis Hüb.*—*Bombyx Linn.*, *Fab.*, *Haw.*, *Hüb.*, *Goda.*—*Peridea, Leiocampa, Lophopteryx Step.*
Antennæ inserted on each side of the crown above the eyes, short and setaceous, basal joint short and producing a distinct brush of scales on the inside, the following bipectinated in the males, the rays rather short and obtuse, sparingly hairy on the inside (1), and gradually shortening towards the apex, until they vanish (♂); scaly above and pubescent beneath in the female (1 ♀).
Maxillæ very short, forming 2 broad lobes, curved at the apex (3).
Labial palpi very short, horizontal, and very scaly beneath (4); triarticulate, basal joint stout, ovate, narrowed at the base, 2nd a little longer and attenuated, 3rd small, elongate-ovate (4a).

Head very small and short (7a, the profile). Thorax quadrate, not crested. Abdomen stout and cylindric in the male, with the apex rounded, conical in the female. Wings deflexed in repose, superior elongate-ovate, the apex being rounded, interior margin with a bundle of scales projecting over the inferior wings, which are rather small and ovate-trigonal: cilia short. Legs stoutish and woolly: tibiæ, anterior appearing dilated with scales, with a strong internal spine, the others densely clothed with longish scales concealing the spurs, which are slender and acute, the hinder tibiæ having a pair also a little above the apex: tarsi stoutish, anterior producing longish scales externally, 5-jointed, basal joint the longest, the following very short.

Caterpillars smooth, with 6 pectoral, 8 abdominal and 2 anal feet, the back sometimes tuberculated. Pupæ inclosed in a soft cocoon.

DROMEDARIUS *Linn.*—*Curt. Guide, Gen.* 797, 2.

Purplish-brown with scattered gray scales: inside of antennæ ochreous: superior wings with 2 denticulated whitish waved strigæ, forming a bar across the middle, the furthest terminating in an ochreous streak near the posterior angle; a pale ear-shaped spot on the discoidal cell; base ochreous and ferruginous; a ferruginous fascia beyond the centre crenated internally, leaving a fimbria of the ground colour; the lobe blackish: inferior wings mouse-coloured with a pale striga beyond the centre, the anal angle blackish, the same colour tinting a short portion of the cilia, which are pale ochreous: abdomen dark mouse-colour. In this variety the colours are beautifully softened down, but in general the ochreous parts are yellow, the ferruginous band and other parts rusty red, and the strigæ, &c. brighter and defined.

THE Prominent-moths are distinguished by a lobe formed of scales, which projects from the interior margin of the upper wings, forming a prominence upon the back when they are closed, and resting upon the inferior ones when expanded. The caterpillars are very remarkable, generally standing with their tails elevated, in which respect they approach *Stauropus* (674) and *Cerura* (193).

The following British species may be divided into three sections.

* *Thorax not crested: antennæ pectinated in the males.*

1. *trepida* Esp.—*serrata* Thunb.—Wood, pl. 6. f. 37.—*tremulus* Hüb.—*tritopha* Haw. Don, 10. 359.

June, July, Aug., trunks of oaks, Norfolk, Richmond Park, Coombe, Birch, and Darent Woods.

2. *dromedarius* Linn.—Curt. B. E. 739 ♀, var.—*tritophus* Fab.—*dromedarius* Haw. var.—Zebu Don, 12. 397. 1.—*perfusca* Step. Wood, pl. 5. f. 25. is only a dark variety, taken near Dublin.

The beautiful variety figured was given to me by Mr. T. Desvignes: it was bred with a considerable number perfectly like it, by Mr. Baugh and Mr. Murch, from larvæ found on poplars in the forest of Weir in Worcestershire; they were full grown in Aug. and Sept., and the moths appeared in June. The caterpillar of the common variety, which becomes reddish when it is about to change to the pupa, is copied from Hübner. The moth has been found in June and August on oaks, in Cheshire, Suffolk, Norwood, Coomb Darent, &c.

3. *perfusca* Haw.—Harris Expo. t. 13. f. 5. represents a moth not only different in colour to *dromedarius*, but it has 2 prominences on each wing: he says "the head, thorax, and abdomen are of a dirty brown, having somewaves of a lightish hue crossing them. On the slip edge are two small prominences or angles. The inferior wings are almost white, and totally plain; the abdominal corners are as if scorched." It was taken in May.

4. *Ziczac* Linn.—Don, 4. 119.—Wood, f. 26. May, June, July, trunks of poplars and willows, Yorkshire, Norfolk, Coomb and Darent Woods.

** *LEIOCAMPA* Ste. *Antennæ slightly pectinated in the female.*

5. *Tremula* Linn. Faun. Succ.—*dictæa* Linn.—Wood, f. 27.—*trepida* Don, 7. 239. 1. June and August, on poplars, sallows, and birch, Coomb, Darent, Epping, Dover, Norfolk, and Yorkshire.

6. *dictæoides* Esp.—Wood, f. 28.—*Gnoma* Fab. July, Coomb and Darent woods, on the same trees as the last.

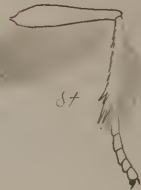
*** *LOPHOPTERYX* Ste. *Thorax crested behind.*

7. *Carmelita* Esp.—Wood, f. 31.—*capucina* Hüb. Beginning of March, Birch-wood, in the British Museum and the Zoological Society.

8. *Cuculla* Hüb.—Don, 10. 338. 1.—Wood, f. 30. June, Darent, end of July, oaks, near Erith, Kent.

9. *Camelina* Linn.—Wood, f. 29.—Don, 6. 183.—*Capucina* Linn. End of April, May, and Aug. Kensington Gardens, Hampstead heath, and Shotover near Oxford, on oaks. J. C.

Digitaria humifusa, from Weybridge Common, was communicated by W. W. Saunders, Esq.



Arctia (Arctia) sp.

DRYMONIA DODONÆA.

The marbled brown or Kitten likeness.

ORDER Lepidoptera.

FAM. Bombycidae.

Type of the Genus, Bombyx Dodonæa Wien. Verz.

DRYMONIA Hüb.—Dimorpha Hüb., Curt.—Chaonia Step.—Notodonta Och.—Bombyx Hüb., Haw., Goda.

Antennæ inserted on each side of the crown, rather short, basal joint with an elongated brush of scales above, the remainder bipectinated in the males (1 ♂), the rays moderately long and slender, ciliated with very fine long hairs beneath, gradually decreasing in length to the apex: very slender and simple in the female, pubescent beneath, with a bristle on each joint (♀). *Maxilla* not longer than the palpi, formed of 2 parallel tapering lobes (3).

Labial palpi small, porrected nearly horizontally, scaly, clothed with long hairs beneath (4), triarticulate, basal joint large, gibbose beneath at the apex, 2nd stout, longer, obovate, the apex oblique, 3rd small, vertical-oval (4 a).

Head short: eyes small and sunk. Thorax subquadrate. Abdomen tolerably long, linear, semicylindric, the apex tufted and truncated in the male, shorter and ovate-conic in the female. Wings deflexed in repose, superior somewhat lanceolate-ovate, the apex rounded: inferior moderate and rounded: cilia thick. Legs woolly, short: tibiæ densely woolly outside; anterior with an internal spine, intermediate and hinder spurred at the apex, the latter with a pair of short spurs a little above them: tarsi 5-jointed, basal joint the longest: claws and pulvilli minute (8† hind leg).

Larvæ naked, with 6 pectoral, 8 abdominal and 2 anal feet. Pupæ subterranean, sometimes inclosed in a slight cocoon.

DODONÆA Wien. Verz.—Curt. Guide, Gen. 802, 2.

Male ochreous-white; antennæ subferruginous; a large patch between the anterior coxæ brown, apex of lateral and central thoracic lobes deep brown; abdomen ochreous; superior wings with the basal half brownish freckled, with 2 basal black sinuated strigæ, the space between them ochreous, a white sublunate fascia across the middle clouded with ochre, the outer margin formed of a blackish denticulated irregular striga forming a large patch on the costa, with an interrupted line of dots on the inside, the marginal nervures brown with small clouds between them; cilia neatly chequered with brown: inferior wings with a light fuscous obscure fascia, nervures darker; cilia dark ochreous faintly spotted with brown. *Female* smaller: thorax and superior wings griseous, the fascia scarcely paler and the brown strigæ and patches less marked: inferior wings more fuscous.

In the Author's and other Cabinets.

THESE moths are distinguished by a little tooth of scales projecting from the interior margin, in the same situation as the lobe in *Notodonta* (pl. 739), to which they are allied, and Ochseneheimer has included them in the same genus.

I regret having to supersede the generic name used in the Guide, but *Dimorpha* had been previously employed by Jurine, and *Chaonia* is objectionable, as that is the name of one of the species in the Wiener Verzeichniss; I have therefore adopted Hübner's title *Dryomides*, which is well applied to the genus, as the caterpillars of all the species live on the oak. There are only two of them British.

1. *Chaonia* Wien. Verz.—Och.—Rororis Fab.—Don. 9. pl. 299. ♀.—Wood, pl. 6. f. 34 ♂.

Cinereous, superior wings with 2 white denticulated strigæ, and a black lunule in the middle; inferior wings subfuscous.

June, Colney-hatch, Coomb, Birch, and Darent Woods; also in Suffolk, Devonshire, and Dunham park, near Worcester, the beginning of May.

The larva is found the middle of September on the oak, and also on the birch and hazel.

2. *Dodonæa* W. V.—Curt. Brit. Ent. pl. 755. ♂.—Ilicis Fab.—trimacula Esp. Don. 10. 352. 2. ♀.—*Querneus* Haw. var.

For the beautiful variety of the male figured I am indebted to Mr. T. Desvignes, who received two from Mr. Bowen, of Worcester, who bred them from larvæ found in that neighbourhood: taken also at Coomb, Birch, and Darent Woods, in May and June.

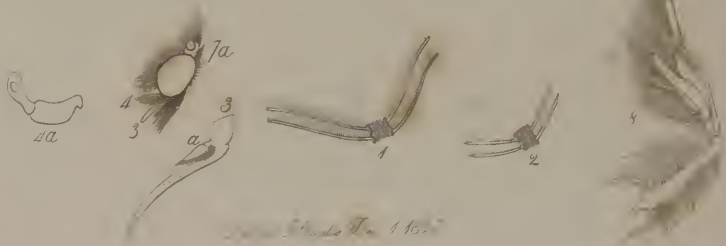
The caterpillar, which is copied from Hübner, lives upon the oak.

3. *Querna* Fab.—Hüb. Bomb. tab. 3. f. 9. ♀

Griseous ash-colour, superior wings with 2 undulating white fasciæ margined with black, and a white lunule in the middle: inferior wings white.

I cannot find a British specimen of this insect, of which I have a foreign example, and I doubt not but females of the former species have been mistaken for it.

Quercus Robur, the True British Oak, is represented in the plate.



Handwritten text, possibly a signature or date, partially obscured.

Dicranura
= *Harpysia*

(CERURA) LATIFASCIA.

inclosed cocoon genus *Harpysia*
Pl. 214 of 222

The broad-barred Kitten.

ORDER Lepidoptera. FAM. Bombycidæ Lat., Leach.

Type of the Genus *Bombyx vinula* Linn.

CERURA Schr., Leach, Germ.—Andria Hüb.—Harpysia Och.—Bombyx Linn., Fab., Hüb., Haw.

Antennæ inserted on the crown of the head, bipectinated in both sexes, setaceous, composed of numerous transverse joints; each producing a pair of branches, much longer in the males than females, finely ciliated on the upper side with long hair in the former sex (fig. 1); with very short in the latter (2).

Maxillæ composed of 2 short flat pubescent tuberculated filaments (3), producing a *Palpus* at the base, biarticulated? attenuated and very pilose at the apex (3 a).

Labial Palpi small, clothed with long hair (4); 3-jointed, basal joint compressed, broad except at its origin, 2nd joint shorter, subclavate, truncated obliquely, the 3rd joint small, oval, nearly concealed in a cavity near the apex of the 2nd (4 a).

Males smaller than the females. Head rather small. Eyes large globe. Thorax not very large nor crested. Abdomen more robust in the females than in the males. Wings deflexed when at rest, entire, superior long. Legs covered with long woolly hair, middle pair the longest. Tibiæ, anterior with a long compressed, rigid lobe on the internal side attached near the base. Tarsi 5-jointed. Claws and Pulvilli small (8, a fore leg).

Caterpillars with 6 pectoral and 8 abdominal feet, the last joint not producing anal feet, but 2 long filaments between which are 2 small spines.

Pupæ inclosed in a hard case formed of small pieces of wood united by gluten.

LATIFASCIA Nob.

Dull white. Head and fore part of thorax cinereous, the remainder blueish-black with 2 obscure orange bands. Abdomen with the back blackish, excepting the margins of the segments, which are whitish. Wings, superior with a broad cinereous fascia variegated with orange and margined with black, extending from the costa to the anal angle, the external margin sinuated; beyond this are 2 indented and sinuated black strigæ and several spots arising from the costa and meeting at the anal angle; a sublunular cinereous spot variegated with orange near the apex; posterior margin with a row of 8 or 9 black spots and 5 or 6 next the base of the same colour; inferior with a pale fuscous band and a narrower obsolete one nearer the middle, by which is a blackish lunulate spot; margin with a row of black spots. Legs variegated with black.

In the Author's Cabinet.

It has been already shown that the imperfect structure of the mouth in the *Bombycidae* is a character of the family, and sometimes they are entirely destitute of those organs; it is therefore remarkable in the genus before us, that the maxillary palpi should be so perfectly developed.

The appearance of the caterpillars when at rest is frequently very grotesque, and their forked tails, a portion of which can be exerted at pleasure, very curious. The larvæ of *C. vinula* are beautiful objects, and by no means uncommon upon poplar-trees, over the polished leaves of which they weave a web imperceptible at first sight, to which the ring of hooks round their abdominal feet are most firmly attached; thereby preventing them from being blown off the leaves, and for the more important object of enabling them to burst their skins when they are about to change them.

The Puss moth is less common than the caterpillar, from a great portion of them probably falling a sacrifice to the Ichneumonids, in spite of their tails, with which it is said they lash themselves to keep them off, as well as employing an acrid fluid, which they can discharge from under the head. The attitude and appearance of the moth when at rest, with its beautiful legs stretched forward, are peculiarly beautiful, as well as the texture and delicate colour of the wings.

The following are British species :

1. *C. vinula* Linn.—Sepp. *Neder. Ins. tab. 5. f. 1—11.*—Don. 3. pl. 85. May. Willows and poplars. *Bonn. 221*
2. *erminea* Hüb.—Esper. 3. tab. 19. f. 1, 2. tab. 78. f. 4. *Bonn. 222*
Larva.—t. 79. f. 6. a. b. Eggs. The true species has very different markings in the upper wings to those of *C. vinula*, and the under wings of the female are white, and the body with large black marks.
3. *bicuspis* Hüb. *Bomb. tab. 10. f. 36. fem.* July. Birch-trees, Darent Wood, Kent. *Bonn. 223*
4. *bifida* Hüb.—Esper. 3. tab. 19. f. 6, 7.—*fuscina* Hüb. var. June. Poplars, Darent Wood. *Bonn. 220*
5. *Furcula* Linn.—Sepp. *Neder. Ins. tab. 6. f. 1—8.* e. July. Palings, and great round-leaved Sallow. *Bonn. 219*
6. *latifascia* Nob. The caterpillar of this insect I found in September, feeding upon a narrow-leaved Sallow, that hung over a rapid stream near Linton, North Devon, and it produced a female moth the middle of the following May. It approaches nearest to *C. Furcula*, especially in the black bands across the abdomen; but the great breadth of the fascia, with its sinuated margin, extending to the anal angle of the wing, has rendered it necessary to distinguish it as a species.

The plant is *Geum rivale* (Water Avenis).

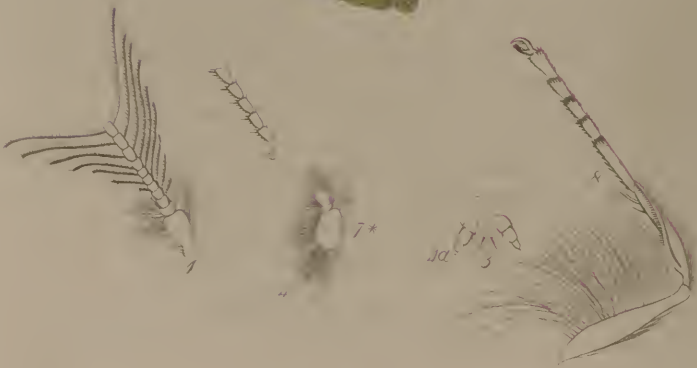


Illustration of the caterpillar and its anatomical parts.

PTILOPHORA PLUMIGERA.

The feathered prominent.

ORDER Lepidoptera. FAM. Arctiidæ Leach.

Type of the Genus, Bombyx plumigera Esp.

PTILOPHORA Steph.—Notodonta Och.—Bombyx Esp., Fab., Hüb.

Antennæ inserted close to the eyes on the crown of the head, short and setaceous, composed of numerous joints, the basal one large ovate, 2nd bowl-shaped, both clothed with long hairs, the remainder, in the male, producing two ciliated branches each, excepting 2 or 3 at the base, where they are shortest, as well as at the apex (1); subserrated and slightly pilose beneath in the female (2).

Trophi very small and imperfect, completely concealed with hair (7*).

Maxillæ only forming two small fleshy lobes (3).

Palpi small but robust, triarticulate, apical joint minute (4 a).

Head very short and hairy. Eyes subovate (7*). Thorax densely clothed with hair, but not crested. Wings somewhat diaphanous and pubescent, superior long, sublanceolate, the interior margin angulated with hair towards the base, inferior wings small. Cilia slightly indented. Abdomen robust, linear obtuse and very hairy at the apex in the male; subconical in the female. Legs rather short, thickly covered with downy hairs. Tibiæ; anterior not short, with a long broad curved lobe on the inside densely clothed with short pubescence (8); the hinder ones with spurs only at the apex.

Caterpillar smooth, and fleshy with 6 pectoral, 8 abdominal and 2 anal feet.

Pupa formed underground, folliculate.

PLUMIGERA Esp., Fab., Hüb., Och., Goda.—variegata De Vill.

Male. Bright ochreous. Rays of antennæ dark brown; eyes black. Thorax pale castaneous. Superior wings with a broad very pale purplish bar across the middle, the external margin formed by a chain, having a link between each of the 4 nervures which are dark purple; inferior wings with a rosy tinge, leaving a very pale indistinct ochreous wave across the centre. Cilia variegated with chestnut; abdomen orange.

Female of a more uniform dull color, the ochreous markings of the upper wings very obscure.

In the Author's and other Cabinets.

THIS moth is evidently nearly related to *Penthophera* (Pl. 213), and exhibits several remarkable peculiarities; the palpi may be termed maxillary, since they appear to me to be attached above the maxillæ, which however are mere rudiments and not contiguous; the internal spine of the anterior tibiæ is curved and regularly ciliated, and the hinder ones have but one pair of spurs at the apex. The antennæ are most beautifully pectinated and resemble two feathers, whence it has been called 'plumigera'; the wings are somewhat transparent, and the nervûres of the superior pair are totally different to any that I have seen.

Most of the specimens of this moth have been obtained by searching for the caterpillars; they feed upon the maple, the great round-leaved willow, and the birch, and are full grown the end of May. Darent Wood seems to be the favourite locality of these larvæ; but Mr. Jos. Standish has found them at Birch Wood and Reddlesdown near Croydon; and he tells me that the caterpillars are generally of a powdery green; that which I have copied from Hübner might probably be on the point of descending into the earth, for his other figure represents one of a whitish green colour, with three yellowish stripes down the back, and one along the side.

The moth appears the end of October, and even as late as November.

A sprig of the Common Maple (*Acer campestre*) with the seed-vessels accompanies the insects in the Plate.



Deer H. M. W. 4

ENDROMIS VERSICOLOR.

The Glory of Kent.

ORDER Lepidoptera. FAM. Bombycidae. *IX Endromidae*

Type of the Genus, Bombyx Versicolor Linn.

ENDROMIS Och., Germ., Curt.—Dimorpha Hüb.—Bombyx, Linn., Fab., Haw., Goda.

Antennæ inserted close to the eyes, rather short and bipectinated, composed of numerous short joints, hairy on the outside, each joint producing 2 rays longer and more pubescent in the male (1), than female (2, a portion towards the base).

Maxillæ none.

Labial Palpi attached to the lower part of the head, approximating, very inconspicuous, forming a spreading brush of stiff bristles (4), composed of two very horny joints, basal one long and stout, curved upward and a little narrowed at the apex, 2nd joint irregularly ovate (4 a).

Males much smaller than the females. Head small and short, clothed with downy scales. Eyes small and globose (7, head in profile). Thorax not very large, woolly and not crested. Abdomen short and woolly, obtuse in the male, ovate-conic in the female. Wings entire, subdiaphanous, forming a triangle in repose; superior subtrigonate in the male, more lanceolate in the female; inferior rather small and rounded: cilia very short. Legs very much alike in size and form. Thighs clothed with fine long hair beneath. Tibiæ, anterior not short, with a long slender spine on the inside extending beyond the apex (8), posterior with 2 minute spurs only at the apex. Tarsi longer than the tibiæ and 5-jointed, basal joint the longest. Claws strong and acute. Pulvilli formed of 2 lobes with a ciliated process between them.

Larvæ attenuated before, with 6 pectoral 8 abdominal and 2 anal feet, having a pyramidal horn at the apex of the last joint.

Pupæ loosely inclosed between leaves on the ground.

VERSICOLOR Linn. Faun. Suec. 294. 1111.—Curt. Guide, Gen. 805. 1.

Male orange brown: antennæ, eyes and outside of tibiæ and tarsi, black: anterior margin of thorax and sides and tips of lateral lobes white: abdomen blackish at the base, orange at the apex: superior wings with a black striga before the middle, internally whitish, another beyond it angulated at the bottom, whitish externally, a black curved or < shaped mark on the disc, a very waved and interrupted line towards the posterior margin producing 3 subovate white spots at the apex, one near the middle and an elongated one near the posterior angle, the nervures on the margin yellowish: inferior wings dark orange, with a waved striga across the centre and some patches of brown below.

Female duller and paler, the inferior wings whitish, similarly marked to the male, but the margin is brown.

In the Author's and other Cabinets.

1/1 Becc. II p 203. Conjecture from S.E.F. 1885 p. 607

ABOUT forty years back British specimens of this beautiful moth were so rare, that only one was well authenticated; and now there is scarcely a cabinet in which the male, at least, is not to be found.

A very excellent history of this insect is given by Mr. J. P. Neale in the Entomological Transactions, where he says, "The larva was beat off the Birch in Darent Wood, near Dartford in Kent, June 6, 1805. This larva was placed in a cage, and continued to feed until July the 8th; it then began to spin amongst the dead leaves, mixing the earth and leaves in a web, like *Noctua Sponsa* and *N. Nupta*. The perfect insect appeared the 20th of March following." Several have been bred in February, and a female as early as January 19th; and one of this sex was taken the 15th of April, on an Alder stump in Coomb Wood. Males have remained in pupæ two years, one of which was bred by Mr. Standish in November.

Godart says the caterpillars live in societies, containing from twelve to fifteen individuals, during the first six weeks, and always raise the anterior portion of the body in repose, like those of the Sphingidæ, which they also resemble in having a sort of tail and oblique pale stripes on the sides. They feed on the Birch, Alder, Nut, Beech, and Lime, and are full-grown the beginning of July.

This insect is widely dispersed, having been observed at Darent and Coomb Woods; Ashdown Forest, Sussex; near Plymouth, and in Dorsetshire, I believe; near Ipswich in Suffolk, and in Shropshire.

The males fly with great rapidity from about eleven to two o'clock in the day in woods, and are very difficult to capture. Mr. Haworth is of opinion that "The males fly by day in the manner of *B. (Lasiocampa, pl. 181.) Quercus*, hunting the sluggish females, which are incapable of easy flight, on account of their heavy bodies, and their wanting the spiral spring and socket of the males at the base of the upper wings. There is no doubt but the males 'assemble' in the manner of the Eggar and Vapourer Moths, &c., in the vicinity of female pupæ about to hatch."

Endromis is nearly allied to *Ptilophora (pl. 328.)* on the one hand, and to *Saturnia (Genus 806 of Guide)* on the other. I should observe, that the palpi are so thickly clothed (except at the base) with rigid hairs, which it was impossible to remove, that some portion of the joints may not be quite correct in the outline.

I am indebted to a friend for the drawing of the larva, which is represented feeding on the Birch-tree (*Betula alba*).



Chrysomelidae

1850 11. 30 17. 2

CLISIOCAMPA CASTRENSIS.

The Ground Lackey.

ORDER Lepidoptera. FAM. Bombycidæ *Lat., Leach.* *vill Bombycidæ*

Type of the Genus Bombyx Neustria Linn.

CLISIOCAMPA *Nob.*—Gastropacha *Och.*—Lasiocampa *Germ.*—Bombyx *Linn., Fab., Hüb., Haw.*

Antennæ inserted close to the eyes on the crown of the head, short, setaceous, bipectinated, the pectinations ciliated, long in the male and gradually decreasing in length to the apex (1), short in the female (2).

Maxillæ and *Mandibles* none.

Labial palpi short, and very indistinct, being concealed by scales, the basal joint producing a fascicle of hairs beneath (4); triarticulate, 1st joint rather robust, 2nd larger, elongate-ovate, 3rd minute oval (4 a).

Males smaller than the females. Head very small and scarcely visible from above. Eyes globose (7). Thorax very robust. Abdomen short and small in the male, long robust and conical in the female.

Wings deflexed when at rest, short in the males. Tibiæ, anterior producing a broad compressed and pubescent lobe on the inside. Tarsi 5-jointed, basal joint the longest. Claws simple. Pulvilli distinct.

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal feet, cylindrical and hairy.

Pupæ inclosed in a long silky cocoon.

CASTRENSIS *Linn. Syst. Nat. 1. pars 2. 818. 36. Haw. Lep. Brit. 128. 86.*

Male pale straw colour, superior wings with 2 dull castaneous strigæ (sometimes forming a bar across the middle), the 1st arising at the base and reaching to the costa, and a more obscure waved line, beyond the 2nd. Rays of the antennæ and 2 or 3 spots on the cilia dull castaneous. Abdomen tinged with ferruginous: inferior wings dull castaneous, cilia and an obscure line across the middle pale.

Female, dull yellowish castaneous; 2 straw-coloured waved lines forming a bar across the superior wings, the cilia of which are variegated with straw colour.

Obs. This is a very variable species.

In the Cabinets of Mr. Haworth, Mr. Parsons, and the Author.

As the following insects vary from the other Bombycidæ, I have distinguished them as a genus by the name of Clisiocampa, on account of the larvæ living in a tent or web.

When the caterpillars are young they live together in a

common web; and very interesting anecdotes relating to some of the species are given by Reaumur, and Kirby and Spence. Some of the females deposit their eggs in a compact ring, round the twigs of trees and plants.

The following are British insects.

1. *C. Neustria* Linn., *Haw.*—Don. 3. 95. ♀.—*var. bilineatus* Haw.

The handsome caterpillars of this insect present themselves in June in every hedge and garden, doing sometimes incredible mischief to the fruit trees; they have been very abundant this year in the neighbourhood of London: the moths appear in July and August.

2. *C. castrensis* Linn.—Curtis *Brit. Ent. pl.* 229.

It is with great satisfaction that I lay before my readers so complete a drawing of this local insect, which was discovered many years since in great abundance in the Isle of Sheppey by Mr. William Curtis. I was indebted to the late Mr. E. Blunt for the caterpillar; and to Mr. C. Parsons for the loan of the moths and the following account.

“In the beginning of May 1827, in an island on the Essex coast, called New England, I found some larvæ of *Bombyx castrensis* newly hatched, and feeding on the Sea Wormwood. I took them home and was careful to supply them daily with fresh food, but in the course of a week they all died. In the beginning of the following July I again found the caterpillar feeding on *Artemisia maritima*, *Plantago lanceolata*, and *Daucus Carota*. With these I was more fortunate; for about the middle of the month (July) they retired into the pupa state, and on the 10th of August a female of the moth appeared, and about a week after a beautiful male. The last I bred was on the 22nd of August. It is a difficult insect to rear, as the larvæ if taken before they are nearly full fed, pine and die; and half of what I had in pupa did not come out. The male is the rarer sex, the specimen figured being the only one I have seen.”

3. *C. Cratægi* Linn., *Haw.*—Don. 4. 117.—Sepp. 2. 25.—Mali and Avellanæ Fab.—*var. pallidus* Haw.

The caterpillars are found in May and June, on Willows, the Black and White Thorns; and the moths appear in August and September.

4. *C. processionea* Linn., *Reaum.*—Kirby and Spence, 1. 131 & 473. & 2. 23.

This species is recorded by Stewart; and in the British Museum is a specimen, I believe, which Dr. Leach sent from Devon.

The plant is *Artemisia maritima* (Drooping Flowered Sea Wormwood).



Phalaena (Lepidoptera) ...

LASIOCAMPA MEDICAGINIS.

The Medick Eggar.

ORDER Lepidoptera. FAM. Bombycidæ *Lat., Leach.**Type of the Genus Bombyx Quercus Linn.*LASIOCAMPA *Schr., Germ., Leach.*—Gastropacha *Och.*—Bombyx *Linn., Fab., Lat., Haw.**Antennæ* inserted towards the hind part of the head, nearly straight, setaceous, strongly bipectinated in the males, each branch being ciliated and producing a rigid bristle near the apex, inclining upward (fig. 1) : serrated in the females (2).*Maxillæ* and *Mandibles* none.*Palpi* 2, small short hairy (4) ; 3-jointed, 1st and 2nd joints robust, the former the longest, 3d minute ovate (4 a).

Males smaller than the females.

Head short. Eyes small (7). Thorax large not crested. Abdomen of the males attenuated and divided at the apex ; robust and subovate in the females. Wings entire, deflexed when at rest. Tarsi 5-jointed.

Claws and Pulvilli distinct.

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal feet ; cylindrical and hairy, curling themselves up when disturbed.

Pupæ inclosed in an obtuse oblong cocoon of very close texture.

MEDICAGINIS *Och. Schmet. v. 3. p. 264.**Male* dull castaneous, abdomen brighter. *Antennæ* dull ochraceous. Eyes cinereous. Wings, superior sparingly speckled with ochraceous hairs, an abbreviated and sinuated fascia near the base, and another beyond the middle slightly denticulated on the internal side, dull ochre ; a cream-coloured spot near the disk approaching the costa : inferior wings rather paler, darkest towards the abdomen with a curved pale rather obscure line crossing near the middle.*In the Cabinet of Mr. Stone.*

THIS natural genus of Schrank having been sunk by Ochseneimer, together with several others, to form his large group *Gastropacha*, it becomes necessary to show our grounds for again separating them, which may be done in the following tabular form.

1/2 niant Bern II p. 195 et 19. of Bern II 1869

A.

Palpi long. Inferior wings when at rest projecting beyond the costa of the superior. Larvæ not cylindric, having fascicles of hair down the sides and a dorsal tubercle near the apex. Cocoons long, attenuated, silky and soft.

a. Antennæ curved. Tongue short. Wings denticulated.

Gastropacha.

b. Antennæ straight. Tongue none. Wings not denticulated.

Odonestis.

B.

Palpi minute. Inferior wings not projecting when at rest. Larvæ cylindric clothed with hairs. Cocoons oblong, obtuse, dense and rigid in texture.

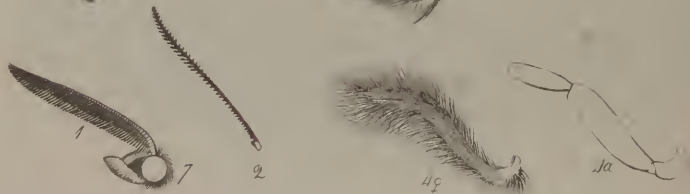
Lasiocampa.

1. *Quercus* Linn.—Don. Brit. Ins. 3. 103 & 104.—Spartii Hüb.—Esp. 3. tab. 13. f. 2 & 3. a variety of *L. Quercus*.
2. *Medicaginis*.
3. *Trifolii* Fab.—Linn. Trans. v. 3. pl. 4. f. 1. —Sepp, v. 2. tab. 13 & 14.
4. *Rubi* Linn.—Don. 2. 69.—Sepp, v. 2. tab. 7, 8, & 9.

The characters that distinguish *L. Medicaginis* from *L. Trifolii* are the abbreviated fascia next the base of the superior and the obscure one across the inferior wings: the breadth of that which is parallel to the posterior margin of the upper wings is also greater. Were it not for Esper's figure of the caterpillar (from which ours is copied, and which is referred to by Ochseneimer) being very different from those of *L. Trifolii*, so beautifully represented by Sepp, we should have considered *L. Medicaginis* as a variety only of that insect. Five caterpillars were found near Lyndhurst the end of June, by Mr. Joseph Standish, who fed them upon heath, grass, and medick until the beginning of July, when they were full grown and changed to pupæ, from whence they emerged the beginning of the following August.

The reader is referred to Mr. Haworth's *Lepidoptera Britannica* (p. 82) for an amusing account of the assembling of males by a virgin female, and to the *Introduction to Entomology* (vol. i. p. 131), for observations upon a singular property which the larvæ of this genus possess, the hair creating excessive irritation and pain when applied to the skin.

The larvæ will probably feed upon most of the Trefoils and Medicks, as the plant figured, *Trifolium pratense* (the Common Purple Trefoil), is said to be its food, as well as *Medicago lupulina* (pl. 6), from which our insect has received its name.



Lasiocampa

DENDROLIMUS PINI.

The Pine Lappet Moth.

ORDER Lepidoptera. FAM. Bombycidæ.

Type of the Genus, Bombyx Pini Linn.

DENDROLIMUS Germ.—Eutricha Hüb.—Odenesis and Odonestis Curt.—Gastropacha Och.—Lasiocampa Schr.—Bombyx Linn., Haw., &c.

Antennæ inserted towards the hind part of the head, close above the eyes, rather short and setaceous, composed of numerous joints, beautifully bipectinated in the male, each branch ciliated (1), the rays very short in the female (2).*Maxillæ* short, slender and spiral.*Labial Palpi* forming a short acute beak in the male, obtuse in the female, much more densely clothed with scales in the male than female, basal joint nearly as long as the 2nd which is subovate, 3rd as long as the first and cylindric.*Male* nearly as large as the female. Head clothed with a dense bunch of scales projecting over the forehead and meeting the palpi (7). Eyes rather small and orbicular, nearly of the same size in the sexes. Thorax suborbicular and not crested. Abdomen somewhat linear obtuse and tufted at the apex, which is slightly curved upward in the male, more robust and conical in the female. Wings deflexed when at rest, the inferior said to project beyond the anterior margin of the superior which are entire; somewhat obtuse in the male, more lanceolated in the female. Cilia thick and slightly indented. Legs densely clothed with scales, anterior shorter in the male than female. Tibiæ; anterior very short and densely clothed with longish hair in the male, with a broad and long internal horny lobe inserted near the base, small in the female; the other tibiæ densely clothed also and spurred. Tarsi shorter in the male than female, 5-jointed, basal joint of the anterior pair densely fringed with scales in the male. Claws strong curved and hooked. Pulvilli distinct.*Larvæ* with 6 pectoral, 8 abdominal and 2 anal feet: flat and smooth beneath, rounded above, somewhat hairy, with a slight tuberculated wart upon the penultimate joint, and bundles of hairs disposed along the sides.—Och.*Pupa* with its segments simple, inclosed in an oblong soft cocoon.PINI Linn. Faun. Suec. 292. 1104.—Hüb. tab. 42. f. 184 & 185.—Röesel, v. 1. tab. 59.—Curtis's Guide, Gen. 810^a.*Male* reddish ochre, more or less gray: superior wings chestnut at the base and extending to the disc; before the middle is a sinuated striga with a lunular white spot upon it, and beyond the middle an oblique ochraceous fascia, the inner margin crenated with a brown line, the outer one very much sinuated and marked with strong brown spots: inferior wings pale castaneous. *Female* paler.*In the Cabinets of the British Museum, Mr. Vigors, and the Author.*

11 Dec 11 1897

OF all the Orders, that of the Lepidoptera is by far the most difficult to form into genera, in consequence of the parts of the mouth being frequently imperfect, and closely covered with scales or hair; and the characters to be derived from the habits of the species will only supply the materials for forming larger groups. Latreille in his various works has comparatively done little in the arrangement of this beautiful Order, which appears to have been the favourite of the collector and the outcast of the scientific. Savigny indeed is never to be forgotten for his inimitable dissections, so exquisitely delineated in his "Mémoires sur les Animaux sans Vertèbres"; and it is to be regretted that his labours were limited to the comparison of the analogous organs of some of the Orders only. Schrank has instituted many good genera, as well as Ochsenheimer and Germar; but the characters of the former are often very unsatisfactory, and the latter frequently gives nothing more than a type of the group. With such assistance it is with difficulty that the genus to which a lepidopterous insect belongs can be determined.

Upon a careful revision of the insects which were at first included in the genus *Odonestis*, I am disposed to agree with Germar that *Pini* and *Potatoria* may fairly be considered as types of two genera; and as he proposed a name in 1811, and Hübner not till 1822, and then included the above two insects, thereby merely superseding Germar's name, I have restored that which has the right of priority. As I shall not publish a plate of *O. Potatoria*, I shall give that genus in the next leaf.

When we were at Marseille the end of June, Mr. Walker found two caterpillars of *D. Pini* feeding on pine-trees; the hairs with which they were clothed caused excessive irritation when handled, and they were more like those of *Gastropacha quercifolia* in form, and of a more uniform colour than Hübner's and Röesel's figures, and very much powdered with white; the moths were produced the end of July, and were very gray.

About the middle of September 1748, Mr. Wilkes found a caterpillar of *D. Pini* upon a white-thorn bush near Richmond Park, which lived through the winter without eating; and my friend Joseph Sparshall, Esq. took a fine male moth in the Norfolk and Norwich Hospital, 22nd of July 1809, and I was indebted to him for being able to give a representation of it; a British specimen never having been elsewhere figured. The example in the collection of N. A. Vigors, Esq. was from Beckwith's cabinet, and the female in my own possession from Mr. Plastead's.

Being desirous of making this work as complete as possible, I have introduced a copy of the female caterpillar from Röesel, who says that it feeds upon *Pinus sylvestris* and *P. Strobus*; that in June it spins a cocoon, and three weeks after the moth appears. The caterpillar of the male is said to differ very much from that of the female.

Pinus sylvestris (Scotch Fir) is represented in the plate.

Lasiocampa

(ODONESTIS) POTATORIA.

The Drinker Moth.

ORDER Lepidoptera.

FAM. Bombycidae.

Type of the Genus, Bombyx Potatoria Linn.

ODONESTIS Germ., Curt.—Odenesis Lea., Sam., Curt.—Eutricha Hüb.—
Gastropacha Och.—Lasiocampa Schr.—Bombyx Linn., Haw., &c.

Antennæ inserted towards the hind part of the head, close above the eyes, long setaceous, composed of numerous joints, beautifully bipectinated in the male, the branches long, ciliated compressed and clavate at the apex, each furnished with a strong bristle: the rays short but distinct in the female.

Maxillæ none.

Labial Palpi forming a porrected beak, contiguous at the base, compressed towards the apex and closely applied, acute and densely clothed with compact scales in the male (pl. 7, f. 4 ♂), more obtuse, loose and hairy in the female (4 ♀), triarticulate, basal joint short and curved, 2nd long and stout, 3rd considerably longer than the 1st, sub-elliptical (4 a).

Male smaller than the female. Head clothed with a dense bunch of scales projecting over the forehead and meeting the palpi. Eyes rather small and orbicular, larger in the male than female. Thorax suborbicular not crested. Abdomen linear obtuse, tufted at the apex and slightly cleft in the male; robust and ovate-conic in the female. Wings deflexed when at rest, the inferior projecting beyond the anterior margin of the superior ones, which are entire, obtuse in the male, sublanceolate in the female. Cilia thick and slightly crenated. Legs very hairy, anterior shorter in the male. Tibiæ, anterior very short and densely clothed with long hairs in the male, with a long and broad internal horny lobe inserted near the base, which is small in the female; the other tibiæ spurred. Tarsi shorter in the male than female, 5-jointed, the basal joint of the anterior pair in the male densely fringed with scales. Claws strong curved and hooked. Pulvilli distinct.

Larvæ with 6 pectoral, 8 abdominal, and 2 anal feet, somewhat hairy, with 2 rows of fasciculi down the back, a larger one behind the head and another near the apex.

Pupa inclosed in an oblong cocoon of close texture.

POTATORIA Linn. S. N. 2. 813. 23.—Don. Brit. Ins. 5. pl. 148.—Curt. Guide, Gen. 810. 1.

Male ochraceous variegated with tawny, superior wings rather obtuse, with a curved brown striga at the base, and an oblique one stretching from the middle of the interior margin to the apex, between this and the posterior margin is a crenated curved line of the same colour, a whitish spot near the disc and a smaller one above it: inferior wings tawny. Females seldom so dark as the males.

11 Nov 21 1906

SINCE the first edition was published in 1824, much has been done towards smoothing the way to an arrangement of the Lepidoptera. Ochseneimer's work, continued by Treitschke, has been published as far as the Tortricidæ, and a valuable abstract of their characters given by J. G. Children, Esq. in the Philosophical Magazine; Godart's Lepidoptères de France, continued by M. Duponchel, has advanced to the end of the Phalænidæ; and Dr. Horsfield has discovered some beautiful affinities in the exotic Papilionidæ and their caterpillars, which are now publishing in his elegant work on the Lepidopterous Insects of Java. We still, however, have to lament the want of decided generic characters, such as are to be found in the other Orders of our British Insects; but I do not doubt that, by persevering in giving the details to each group, eventually the most valuable results will arise, and a more natural arrangement will be formed. At present the one developed in my Guide will be found, I think, to present a more natural series than any other that has been given; but no doubt many improvements may, and I hope will, be made during the progress of this work.

I once thought the internal lateral lobe or spine attached to the anterior tibiæ of many Lepidoptera would afford generic distinctions, but in the genus before us, their irregularity in the sexes shows that they are, as I have lately hinted, for cleaning the antennæ; for in *O. Potatoria* they are very large in the male and minute in the female.

The name of Drinker caterpillar was given to our insect more than a century back by Goedart, from his imagining that it is subject to thirst; and that when it drinks, it takes breath, lifting the head up to swallow the water more easily, in the same manner as fowls, who, after having drank, never fail to raise their heads towards heaven. The caterpillar feeds upon grasses, and the bramble, I believe, and many other plants; it passes the winter in a torpid state, and in the spring it is found on grassy banks and hedges; it changes to a chrysalis the end of June or beginning of July, and the moths appear the end of the month. They vary considerably, sometimes the costal portion of the base and the posterior margin are brown with a grayish bloom upon them, the inferior wings having the basal half ochreous, terminated abruptly; in others the insect is almost entirely brownish castaneous.

In looking over the beautiful collection formed in the East Indies by Major General Hardwicke, I was astonished to find moths scarcely differing, apparently, from *O. Potatoria*, *Lasiocampa Quercus*, *Trifolii*, &c.



Red by Curtis Lovin. June 1894

Lasioleuca (GASTROPACHA) QUERCIFOLIA.

Lappet Moth.

ORDER Lepidoptera. FAM. Bombycidæ *Lat., Leach.*

Type of the Genus Bombyx quercifolia Linn.

GASTROPACHA *Ochs., Germ., Leach.* Bombyx *Linn., Fab., Lat., Haw.*

Antennæ recurvate, setaceous, strongly bipectinated; first joint large, with a long tuft of hair on the internal side, nearly alike in both sexes. (f. 1. female antenna.)

Labrum attached to the head. (6. a.)

Mandibles obsolete.

Maxillæ distant, broad, flat, short, membranaceous (6. c.), arising just below the pharynx. (6. f.)

Palpi 2, projecting like a beak, approximating (6. e. shows their insertion), porrected, compressed, hairy (4.); three-jointed, sub-cylindric; second joint long, slightly curved; third, obtuse (4. a.).

Head with a tuft of hair projecting in front. (7.) Thorax not crested.

Abdomen thick, especially in the female. Wings dentated, superior ones when at rest deflexed; the inferior projecting beyond them. Tibiæ: anterior ones short, with a curved, compressed spine on the internal side, at the base of which is a long brush of hairs. (8. a.)

Tarsi 5-jointed, terminated by strong claws, bristles, and pulvilli. Larva hairy, with 16 feet, the hinder ones formed for walking, with fleshy appendages on each side the segments of the abdomen, which conceal the feet, particularly the three anterior pair, an evident tubercle on the penultimate joint. Pupa with its segments simple, covered with a fine whitish powder, inclosed in an oblong cocoon loosely formed of its thread and hairs.

QUERCIFOLIA *Linn. Syst. Nat. t. 2. p. 812. n. 18. Fab. Ent. Syst. t. 3. pars 1. p. 420. n. 42. Haw. Lep. Brit. p. 95. n. 19.*

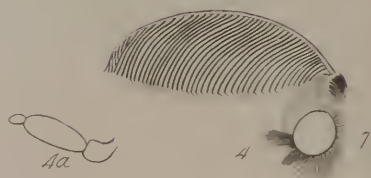
Chesnut colour, slightly tinged with whitish lilac. Rib of antennæ, palpi, and tarsi, black, changing to violaceous. Superior wings dark-brown along the costa, with three black, oblique, waved lines, more or less obscure, the central one of which is visible beneath. Inferior wings at their base as pale as the abdomen, with an obscure, broad, transverse fascia, darkest towards the edges: the female is much larger than the male, and has an imperfect dark spot towards the centre of the upper wings.

In the Author's and other Cabinets.

IN the seventh Plate of British Entomology was figured *Odonestis Pini* *, which was referred to that Genus from its characters agreeing better with the type *O. potatoia* than with *Gastropacha quercifolia*; and I think it will be admitted that I have not erred in so doing, when the characters laid down in the generic description are carefully examined: the recurvate antennæ, equally bipectinated in both sexes; the distinct maxillæ; the palpi densely covered with short hairs, the last joint (in that state) appearing broad and flat, and the indented wings, are amongst the most prominent features of distinction. The Caterpillars are certainly analogous; but the curious appendages which give them the appearance, when at rest, of having twenty feet, form a singular and important distinction.

Gastropacha, which in the Greek means thick bodies, was established by Ochseneimer, who has confounded a number of genera under this name, from his inability, as he states, to disunite them, although he at the same time acknowledges that they have distinguishing characters. Its specific name it has received from the strong resemblance it bears, when at rest, to dried oak-leaves. It is one of our largest and (when alive) most beautiful insects: the Caterpillars, which are still more beautiful, vary from gray to chesnut, having across their necks two fine velvety blue bands: they are full grown about the end of May, and feed upon Grasses, the Pear, white and black Thorn, Willow, &c. I have several times found them upon the Sloe, and in Suffolk took three upon the *Salix* sketched in the Plate: all of which produced males the beginning of July, one of which is represented with its larva.

* By an error in folio 7 it is printed *Odenesis*; and it was omitted to be observed that the head and antennæ (figures 1 and 2) are those of *O. Pini*, the palpi only being taken from a female of *O. potatoia*.



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Polygona moulinsiana

767.

Liparis

(HYPOGYMNA) MONACHA.

The Black Arches.

ORDER Lepidoptera.

FAM. Bombycidae.

Type of the Genus, Bombyx Monacha Linn.

HYPOGYMNA Hüb., Curt.—Psilura Step.—Liparis Och., Germ.—Lymantria Hüb.—Bombyx Linn., Haw., Goda.

Antennæ inserted on each side of the crown near to the base, short curved ovate and bipectinated in the male (7), the rays very long almost to the apex, capillary, ciliated on both sides, with a long drooping bristle near the apex of each (1 ♂): every joint producing 2 short rays in the female, slightly pubescent with a bristle near the apex (1 ♀). Maxillæ none.

Labial palpi short, porrected horizontally a little beyond the head (4), clavate-truncate and triarticulate (4 a), basal joint short, with a brush of hairy scales beneath, 2nd twice as long, stoutish, elongate-ovate, clothed with hairy scales terminating obtusely, and concealing the 3rd joint, which is small and oval.

Males considerably smaller than the females. Head somewhat globose, woolly: eyes large and prominent. Thorax downy. Abdomen of male rather short, the apex tufted and truncated; longer and stouter in the female, the apex acuminate: ovipositor exerted. Wings forming a triangle in repose, slightly deflexed; superior ovate; inferior ovate-trigonal: cilia short. Legs moderate: tibiæ densely clothed with hairy scales, anterior with a long stout internal spine, the others with strong acuminate spurs, hinder with a pair also a little above the apex: tarsi 5-jointed, basal joint long: claws strong: pulvilli distinct.

Larvæ with 6 pectoral, 8 abdominal and 2 anal feet; having tubercles producing tufts of hair. Pupæ inclosed in a slight web.

MONACHA Linn.—Curt. Guide, Gen. 812. 2.

Male ochreous-white: antennæ brown; a black spot on the head; collar with a black band and 2 spots on the thorax: abdomen slightly rosy on the sides, the segments beyond the middle black at the base: superior wings with 4 strongly indented, waved black strigæ, forming patches on the costa, more or less suffused and forming a very irregular fascia across the middle, with several spots towards the base: cilia spotted with black: inferior wings fuscous, with a faint white indented striga towards the margin; cilia white, with black spots. Female: antennæ black: abdomen very rosy, with lines of black spots down the back and sides, terminal segments blackish at the base, apical one piceous, apex ochreous.

THE males of *B. Monacha* and *B. dispar* of Linnæus are so exactly alike in habit, and the larvæ bear so strong a resemblance to each other, that I very much doubt if the differences in the females are sufficient to authorize forming them into two genera. Hübner in his fanciful arrangement of the Lepidoptera, had separated and given names to them long

v. Beau II 170

before the appellation of *Psilura* was applied to the former species in the Illustrations, and he has not employed *Hypogymna* for either of them.

H. Monacha is a very handsome moth, and I have been tempted to figure a splendid variety of the female presented to me by Mr. J. Weaver, a very zealous and promising Entomologist, who took it near Petersfield. The caterpillars of this species live upon the Scotch fir, and are sometimes so abundant in Germany as to deprive those trees entirely of their foliage; they feed also on the bramble, birch, apple and oak, on which they are generally found in this country: they are full-grown the beginning of July, and the moth occurs about the end of August; trunks of trees and paling in Epping and the New Forests, and Mr. T. Desvignes has taken it in abundance in Black-park near Uxbridge, and at Darent.

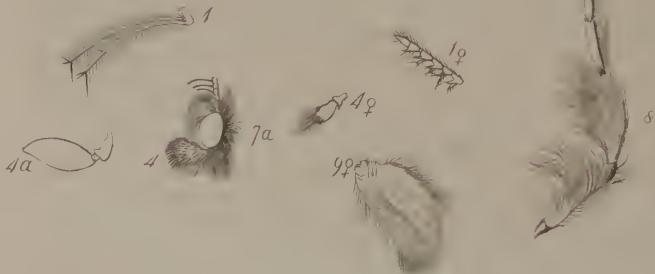
H. dispar, called the Gypsy moth, is figured by *Donovan*, v. 5. pl. 163. The palpi of the female do not project beyond the head, and are quite concealed beneath it; those of the male are clavate; the abdomen of the former sex is very stout, ovate and obtuse at the apex, and thickly clothed with silky hair. The larvæ are polyphagous, feeding on the oak, elm, lime, willow, and fruit-trees generally, and are sometimes very destructive in gardens from June to August. At the time *Donovan* wrote, these moths were so rare that he could not obtain British specimens to figure in his work; it is not easy therefore to conceive the delight I experienced when a boy, on finding the locality of the Gypsy moth: after a long walk I arrived at the extensive marshes at Horning in Norfolk, having no other guide to the spot than the *Myrica gale*, and on finding the beds of that shrub, which grows freely there, the gaily-coloured caterpillars first caught my sight; they were in every stage of growth, some of them being as large as a swan's quill; I also soon discovered the moths, which are so totally different in colour as to make a tyro doubt their being legitimate partners: the large loose cocoons were likewise very visible, and on a diligent search I found bundles of the eggs, covered with the fine down from the abdomen of the females, which is said to be scratched off by the males, to protect them as soon as they are laid. With eggs, caterpillars, chrysalides, and moths I speedily returned, enjoying unmixed delight in my newly-gained acquisitions, and looking forward with pleasure to the feeding and rearing my stock the following year.

I have since found vast quantities of the eggs on the trees that grow on the quay of Rouen, which I gave to Mr. Rad-don, who bred them for several years; they were much stronger marked than our English specimens, and like the Silk-worm moth they degenerated, and eventually came out crippled.

The Plant is *Polypogon Monspeliensis*, Bearded Bent-grass, communicated by Dr. Golding Bird from Plumstead Marshes, and from Guernsey by S.H. Haslam, Esq.



of Banksy H. 18
Berberis vulgaris
(*Epine-vinctiv*)



Small text at the bottom of the page, possibly a signature or reference.

— ORGYIA GONOSTIGMA. ²⁰ "in Bombyx sordidiorum"

The scarce Vapourer or Orange Tussock Moth.

ORDER Lepidoptera. FAM. Arctiidæ.

Type of the Genus, *Bombyx antiqua* Linn.

ORGYIA Och., Curt.—*Bombyx* Linn., Haw.

Antennæ inserted near the eyes, on the crown of the head, short and bipectinated to the apex in the *male*; the basal joint subglobose, with a fascicle of hair on the inside, the remainder producing two pubescent branches, each furnished with 2 bristles at the apex (1); very short and composed of about 20 joints in the *female*, each producing 2 short branches, excepting 2 or 3 at the base, and the apical one, each branch furnished with several bristles (1 ♀, the apical joints).

Maxillæ undiscovered in the male, very short and remote in the female.

Labial Palpi porrected horizontally, meeting at the apex and densely clothed with scales in the *male* (4), biarticulate, basal joint small and clavate, 2nd large subovate-conic (4 a): smaller and remote in the *female*, the 2nd joint subovate, with a brush of hair at the apex (4 ♀).

Male. Head and eyes small (7 a). Thorax clothed with long scales. Abdomen slender. Wings when at rest forming a triangle; superior subtrigonal, inferior rounded. Legs, anterior porrected when at rest, very hairy. Tibiæ, anterior broad, densely clothed with long hairs, the others spurred at the apex. Tarsi 5-jointed, basal joint the longest. Claws and pulvilli minute (8, fore leg). Female apterous, having 2 small appendages only attached to the thorax (9 ♀), densely clothed with hairy scales especially towards the apex, the costa thickened and there are also 2 thick longitudinal nervures. Abdomen very large hairy and filled with eggs. Legs alike.

Larvæ hairy with fascicles of hairs on the head and tail, and tufts on the back, having 6 pectoral, 8 abdominal, and 2 anal feet. Pupa inclosed in a slight cocoon.

GONOSTIGMA Linn. Syst. Nat. 826. 57.—Curtis's Guide, Gen. 813. 1.

Male. Deep brown with an orange tint. Superior wings with a small and large castaneous spot at the base, surrounded with a pale lilac line, a large dark brown stigma in the disc, and a transverse oblong spot of the same colour below it, beyond is an irregular and interrupted orange fascia, with the posterior margin very much sinuated and irregularly bordered with white, forming spots towards the apex and posterior angle: cilia spotted with black: inferior wings darker brown; the cilia ochreous, bearing a brown line.

Female clothed with rather long soft curled hairs, dark reddish brown: eyes black: antennæ and tarsi ochreous.

In the Author's and other Cabinets.

THE larvæ of *Colocasia*, *Orgyia*, *Laria* and some of the *Arctiæ* (pl. 68) are remarkable for the beautiful tufts of hairs that ornament them: the male caterpillars are much smaller than the female in our genus.

The males of *Orgyia* are nearly related to *Hypogymna dispar*; they are very similar in form, and are equally active when alive: the females of both are extremely torpid, and the bodies are dilated by an immense quantity of eggs, which the common Vapourer Moth (*O. antiqua*) deposits in the most beautiful order; this sex however is distinguished from its congeners by having only appendages or rudiments of wings.

Both the species inhabit Britain.

1. *O. gonostigma* Linn.—*Curt. Brit. Ent. pl.* 378.—*Don.* 9. 316.

The caterpillar feeds on the oak, birch, nut, saw, barberry, rose, and bilberry (*Vaccinium Myrtillus*, pl. 73.), and is found in May and June, and the moth is produced in August and September.

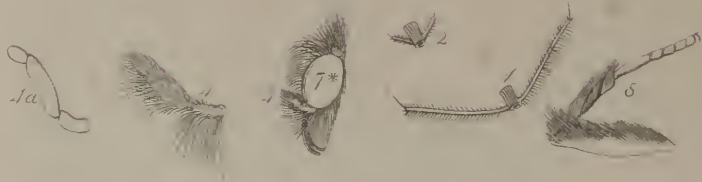
It is a rare insect, but the handsome males, which fly during the day in fine weather, may be captured by taking a bred female to the spot where the caterpillar was found, when the males will assemble to the spot, in the same manner as *Lasiocampa Quercus*, *Saturnia Pavonia-minor*, and other *Bombycidæ*. I have found the caterpillar in Coombe Wood: it is said to inhabit Lewisham, Erith, and Greenhithe, in Kent, and Bagley Wood, Oxfordshire. Mr. J. Standish informs me that Mr. King once bred a female in July, the egg from which hatched in August; they changed to chrysalides, and the moths came out from October to Christmas, towards which period they gradually became paler.

2. *O. antiqua* Linn. *Faun. Succ.* 297. 1120.—*Don.* 1. 16.

Male orange-ferruginous, clouded a little with brown: superior wings with a dark striga at the base, one before, and another beyond the middle, waved and sinuated, dark on the inside; a stigma near the disc pale orange in the centre, an indistinct line of long ferruginous marks between the nervures towards the posterior margin, and a white kidney-shaped spot at the posterior angle, surrounded by a suffused margin of dark brown: cilia spotted brown: inferior wings dark orange. *Female* pale cinereous, clothed with soft short straight hairs, the appendages very pale: eyes and underside of antennæ black.

This moth is very common; the caterpillars are seen rambling over the roses and other plants and trees in our gardens, they feed also on the apple, lime, oak, saw, black and white thorns, alder, plum, bramble, &c. They are found from April to August; the moths have been observed from July to October; the males are frequently seen resting on our windows, and even flying in the streets of London.

The Plant is *Berberis vulgaris* (Berberry).



Chrysalis larva (Fig. 1000)

ARCTIA CÆNOSA.

The Whittlesea Arctia.

ORDER Lepidoptera. FAM. Arctiadæ Leach.

Type of the Genus Bombyx Salicis Linn.

ARCTIA Schrank., Lat., Leach. Bombyx Linn., Fab. Phalæna Linn.

Antennæ longer in the males than in the females, bipectinated, the branches which are very long in the males (fig. 1), and very short in the females (2), arise from the base of each joint, and are ciliated and terminated by a bristle, the 1st joint is large globose, with a dense and long tuft of hairy scales.

Labrum and *Mandibles* small and obscure.

Maxillæ short, flat, membranaceous, composed of two separate filaments (7*).

Labial palpi projecting in some beyond the head, very hairy, cylindrical, 3-jointed, 1st and 3rd joints short, intermediate one long (4 and 4 a).

Wings trigonate, deflexed, undivided. *Legs* short, robust. *Tibiæ* short, with a compressed spine on the internal side of the anterior pair, 4 posterior ones with spurs at their apex. *Tarsi* 5-jointed, *claws* very minute (8 a fore leg).

Caterpillars hairy with 6 pectoral, 8 abdominal, and 2 anal feet.

CÆNOSA Hübner's *Europaischer Schmetterlinge*, pl. 51. 218. mas.

Male: cream colour, head and anterior part of thorax fuscous-ochraceous: superior wings griseous, tinged with fuscous-ochraceous, darkest along the costa and beneath the central nerve, with a curved line of fuscous spots, more or less obscure, nearly parallel to and approaching the posterior margin; inferior wings pearly white, tinged ochraceous along the posterior margin: underside of superior wings brownish ochraceous, cilia whitish: antennæ cream colour, radii brown; palpi and legs golden colour, dark brown on one side. *Female* dull white tinged with ochraceous, pectinations of antennæ black; legs and palpi entirely aureous, thighs covered with long soft white hairy scales.

In the Author's and other Cabinets.

THE genus *Arctia* now contains 5 British species, and may be separated into nearly as many divisions, from the various characters of the caterpillars. 1. *A. cænosa* Hüb., has a larva with tufts down the back, and long fascicles of hairs like 2 horns upon

of white hair

the neck, and one at the tail. 2. *A. V-nigra* Fab., the larva has tufts down the back, but has no horn-like fascicles. 3. *A. Salicis* Linn., has a larva less hairy without tufts. 4. *A. chrysoorrhæa* Linn.; and 5. *A. phæorrhæa* Haw., have larvæ much more hairy than the last, with whiskers to the head. It must be observed, that in *A. cænosa* the rays of the antennæ are terminated by 3 or 4 spreading bristles; the tongue is shorter; the two first joints of the palpi are much more thickly covered with hair, and the terminal one is much more distinct; the basal and terminal joints when deprived of their scales are much smaller, and the middle one much longer, than in the type *A. Salicis*, from which all the dissections in the plate are made.

We are indebted to J. C. Dale, Esq., for this addition to our Fauna; for having found a caterpillar of *Arctia cænosa* at Whittlesea Meer, he directed the Messrs. Standish to the spot, who took several of the larvæ (one of which is figured), as well as beautiful specimens of the imago.

The caterpillars, which are found and feed upon the Burr-reed, and also, I am informed, upon *Butomus umbellatus*, are full-grown the end of July and beginning of August, when they attach themselves to a leaf, where they form a regular, nearly oval cocoon, semitransparent, and composed externally of their own hairs. It is a curious fact, that the moths appear before many of the larvæ have begun their cocoons, which is the case also with *Hypogymna dispar*. In Hübner's work the male alone is figured, and no representation of the caterpillar has ever before been given.

Arctia chrysoorrhæa and *phæorrhæa* appear periodically, and at times to an alarming degree. *A. Salicis*² is not uncommon upon sallows, but *V-nigra* is in very few cabinets; the caterpillar feeds upon the lime, and the moth has been found upon that tree the middle of August, in the neighbourhood of Darent, Kent.

A leaf of the plant upon which the caterpillar fed, whilst in my possession, is figured; it is a *Sparganium* (Burr-reed); the species could not be ascertained, but probably it will feed upon any of them.

4. Dale. 5. 71
21 " " 71



Desmodium illinoense (Pursh) Kuntz

ARCTURUS SPARSHALLI. /

The long-tailed Bombyx.

ORDER Lepidoptera. FAM. Arctiidae *Leach.**Type of the Genus, A. Sparshalli Curt.*ARCTURUS *Curtis's Guide, Gen. 816.*

Antennæ inserted on each side the crown of the head close to the eyes, composed of numerous joints, covered with scales above, each joint in the male, producing 2 long rays ciliated and terminated by a bristle (1).

Trophi undiscovered.

Head clothed with short scales in front, and with long hairy scales on the crown. Eyes large globose and lateral (7, front view of the head with the antennæ and fore legs). Thorax densely clothed with very long decumbent hairs. Abdomen short, completely covered with down, the apex producing a fascicle of hairs as long as the body, in the male. Wings deflexed when at rest, densely clothed with scales, superior sublanceolate, rounded at the apex; inferior rather small and suborbicular, very hairy at the base. Cilia thick and entire. Legs almost concealed by fine long pubescence. Thighs short. Tibiæ short, anterior broad (8), probably producing a spine on the inside, the others spurred at the apex. Tarsi 5-jointed, anterior very short (8), the others rather long (8†, the hind tarsus and apex of the tibia). Claws and Pulvilli perfect, but concealed above.

Caterpillar unknown.

SPARSHALLI *Curtis.*

Male, cream colour: rays of antennæ ochraceous: eyes cinereous, surrounded with black: anterior portion of the Thorax pale reddish brown: tuft of hair at the apex of the abdomen pale yellow: wings glossy, with the nervures of a dull and pale purplish tint, especially in the superior towards the base: anterior tibiæ in front, as well as the basal joint of their tarsi deep brown; all the tarsi beneath ochreous: pulvilli brown.

In the Cabinet of the Author.

THE cultivation of waste lands, the extinction of woods and gardens, and the erection of extensive buildings, may have co-

/ n'ant Beau

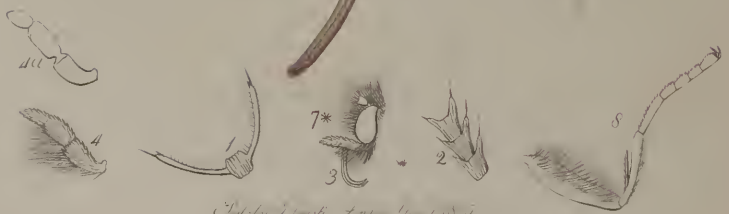
operated to render many insects extremely scarce that were once common around London, but it is scarcely credible that many Lepidoptera could have been overlooked formerly, which now are by no means rare; may we not therefore infer, that some species, which under ordinary circumstances are produced very sparingly, may be multiplied, under favourable incidents, to a vast extent: for it must be remembered that we meet comparatively, with but few of those that exist, and it requires considerable broods probably to throw a single specimen in the way of the collector: when, therefore, any species is found extensively, the production of it must have been very abundant. I am led to these remarks by the fact, that two species of this group have been discovered in Great Britain within a few years: one, the *Arctia cænosa* (pl. 68, which is very rare in Germany and seems to be unknown in France from Godart making no mention of it); the other, now under consideration, appears to be unnoticed by any author.

The texture of the wings is between that of *A. cænosa* and *A. chrysorrhæa*, but the superior are differently formed from either; the male of the latter has a tuft of hair at the apex of the body, but it is very short. The minuteness, if not the absence of the palpi and maxillæ (which in the genus *Arctia* are quite visible to the naked eye) will justify the step I have taken in constituting the genus *Arcturus*.

The male figured was captured by Joseph Sparshall, Esq. in a lane near Horning, early in the morning of the 7th of August 1829; it was resting upon the trunk of an elm-tree he believes.

It gives me the greatest pleasure to dedicate this insect to one of my earliest and most esteemed friends; and the zealous desire to forward science which he evinced on a former occasion, when he deposited in the British Museum the only authentic specimen of one of our finest moths (the *Odonestis Pini*), has again manifested itself by his enriching my collection with the addition of this rare and singular insect.

The plant is *Brassica campestris* (Field Cabbage).



Tab. 11. 3. 1. 2. 3. 4. 5. 6. 7. 8.

SPILOSOMA WALKERII. *Walker.*

ORDER Lepidoptera. FAM. Arctiadae *Leach.*

Type of the Genus Bombyx Menthastris Fab.

SPILOSOMA *Stephens's MSS.* Bombyx *Linn., Fab.* Arctia *Schr., Lat., Leach.*

Antennæ nearly of equal length in both sexes, densely covered with short scales, bipectinated in the male (f. 1), serrated in the female (2), the former with the branches ciliated, terminated by a bristle in both sexes.

Labrum and *Mandibles* small and obscure.

Maxillæ short, flat, membranaceous, composed of 2 separate filaments, ciliated at their apex (3).

Labial palpi projecting horizontally from the head, distant, very hairy, cylindric, 3-jointed, 1st and 2nd joints of nearly equal length, terminal joint not very small oval-conic (4 and 4 a).

Wings *trigonate, slightly deflexed, undivided.* Body *short, robust in both sexes.* Legs *short robust.* Tibiæ *with a spine on the internal side of the anterior pair, 4 posterior with spurs at their apex.* Tarsi *5-jointed.* Claws *very minute (8 a fore leg).*

Caterpillars *very hairy, with 6 pectoral, 8 abdominal, and 2 anal feet.*

WALKERII *Nob.*

Pale buff-colour. Palpi, antennæ, and upper side of legs black. Abdomen orange, each segment having a black spot on the back and one on each side above, and a row of black spots on each side beneath. Superior wings with the costa and edges of the nerves towards the base black, the spaces between the nerves towards the posterior margin black, the 5th, 6th and 7th having spots of buff. Inferior wings with a black spot near the centre, and several upon and near the posterior margin.

In the Cabinet of Sir Patrick Walker.

IN naming this rare and nondescript species after Sir Patrick Walker, I am happy in the opportunity that it affords me of acknowledging my obligations to him for the handsome manner in which he forwarded me in my pursuits in a recent visit to Scotland, as well as for much valuable information relating to the natural history of that interesting country.

The specimen figured was taken by the gentleman in whose cabinet it is now preserved, in his house at Drumseugh, Edinburgh, the end of August 1820: its natural situation in the genus is between *S. Mentastri* (which it most resembles in the colour of its legs and the disposition of its markings) and *S. lubricipeda*, the female of which it comes very close to in colour. Mr. Haworth has a fine species also resembling *S. Walkerii* in markings; but it is smaller, and I think formed more like *S. papyritia*.

In the structure of the mouth and the antennæ this group approaches exceedingly near to *Eyprepia* (plate 21). Mr. Stephens has called it *Spilosoma*, from their spotted bodies. The following species can now be enumerated as British.

1. *Spilosoma lubricipeda* Linn., Don. v. 16. pl. 568.
2. *Walkerii* Nob.
3. *Mentastri* Fab. *Erminea* Mars. Linn. Trans. v. 1. p. 70.
4. *Urticæ* Hub. 2. L. b, b. c: from Yorkshire, in Mr. Haworth's cabinet.
5. *papyritia* Mars. Linn. Trans. v. 1. p. 70.
6. *radiata* Haw. MSS.

The plant figured is *Pimpinella saxifraga* (Common Burnet Saxifrage).



May 1890

PENTHOPHERA NIGRICANS.

ORDER Lepidoptera. FAM. Bombycidae. *VII Liparidae*

Type of the Genus Bombyx Morio Linn.

PENTHOPHERA Germ.—Liparis Och.—Laria Schr.—Hipogymnæ, & Leucomæ Hüb.—Bombyx Linn., Fab., Hüb., Godart.

Antennæ inserted on the crown of the head close to the eyes (1), setaceous, strongly bipectinated in the males, each joint producing 2 slightly clavate rays, very long and slender towards the centre, pilose and terminated by a few strong hairs (1a); simple in the females.

Maxillæ none.

Labial Palpi cuspidate, nearly concealed by hair(4), porrected, triarticulate? the basal joint very obscure, 2nd small, 3rd large oval (4a).

Head small. Eyes small, globose, granulated (7a). Thorax large in the males alone. Abdomen sometimes short and truncated in the male, subovate in the female. Wings large and rounded, rarely small and lanceolate in the female. Legs slender. Tibiæ; anterior with a short slender spine on the internal side, the others spurred only at their apex. Tarsi 5-jointed, basal joint the longest, penultimate the smallest. Claws and Pulvilli distinct (8† hind leg).

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal feet, tuberculated, each tubercle producing a bundle of hairs.

NIGRICANS Nob.

Male, semi-transparent, hairy, brownish black with a yellowish tint; cilia and nervures darker, the former very short, superior wings rather long and narrow. Thorax and abdomen woolly, the latter beneath at the apex and the tarsi silvery.

Female unknown.

In the Cabinet of Mr. Dale.

THE genus Penthophera, like a few other Bombycidae, does not exhibit the least rudiment of a spiral tongue (maxillæ); and in dissecting the type, the palpi appeared to be united at

their base. Germar, who established the genus, has included in it only 3 European species; namely, 1. *B. Morio* Linn.—2. *B. Detrita* Esp.—and 3. *B. Rubea* Fab. To the first of these our insect is so nearly related, that it was believed to be a male of *P. Morio*: upon comparison, however, the following differences are at once discernible:—the pectinations of the antennæ are shorter, the thorax and body are more robust, and the latter is much shorter; the superior wings are longer and narrower, and the nervures are different in their proportions.

Few as the individuals are that compose this genus, they do not quite agree in their habit. *P. nigricans* and *P. Morio* being characterized by a different nervation of the wings to the other two, and the female of the latter not agreeing in figure with those of the remainder.

It must be remembered, that none of the above insects have been detected in Britain, excepting a male of the nondescript species figured in the plate, which was beaten from a Birch-tree, on the outside of West Parley coppice Dorsetshire, by J. C. Dale, Esq., the 18th June 1824.

I am indebted to the Rev. F. W. Hope for a specimen of *P. Morio*; and as the caterpillar of that insect feeds upon *Lolium perenne* (Ray Grass), it has been added to the plate.



Publ. by J. Currier London May 1 1873

EYPREPIA RUSSULA.

Clouded Buff Moth.

ORDER Lepidoptera. FAM. Arctiadae *Leach.* *Bombyx* *III* *Clouded Buff*
Type of the Genus Bombyx Caja Linn.

EYPREPIA *Ochsenheimer.* *Arctia Schrank., Lat. Bombyx Fab. Phalæna Linn.*

Antennæ setaceous (f. 1.), composed of many joints, covered with scales above, naked beneath, bipectinated and ciliated in the males, each branch having a bristle at its apex. (1. a.) rather serrated in the females (f. 2.), each serrature being terminated by a bristle. (2. a.)

Labrum and *Mandibles* } small and obscure.

Maxillæ about the same length as the head, composed of 2 separate filaments, distant, broad and flat.

Labial palpi 2, porrected, covered with long hairs (4.), three-jointed (4. a. the hairs being removed to show the articulations.)

Wings trigonate, deflexed, undivided. *Anterior tibia* with a compressed spine in the centre of its internal side. *Caterpillars* hairy, with 16 feet.

RUSSULA *Linn. Syst. Nat. 2. 830. 71. Fab. Ent. Syst. t. 3. pars 1. p. 464. n. 180. P. sannio Linn. Faun. Suec. 1135. Bombyx sannius Haw. Lep. Brit. p. 133. n. 96.*

Male. Superior wings and thorax vitellinous, costa slightly fuscous, anterior margin towards the apex, interior margin, a lunulated spot in the centre, and cilia puniceous. Abdomen and inferior wings yellowish white; spot in the centre and fimbria fuliginous, cilia puniceous; main rib of antennæ, palpi and legs tinged with red. Under side, superior wings pale ochraceous, costa coccineous; base, a large spot near the centre, and a transverse irregular bar, brunneous; inferior wings pale yellow, with the lunulated spot scarcely visible. *Female* smaller than the male, dull orange, superior wings with an obscure lunulated spot; costa, interior margin, and veins dull puniceous. Abdomen banded with black; inferior wings with their base, abdominal margin, fimbria and a spot near the centre dull black. Under side orange, slightly clouded with black, having a black spot near the centre of each wing. Thorax, abdomen, and legs beneath sanguineous.

In the Author's and other Cabinets.

OCHSENHEIMER having included in this genus *Arctia*, *Callimorpha*, and *Lithosia* of Latreille, I have retained three spe-

• *Bombyx* *III* *121*

cies only of the former genus under his name *Eyprepia*, viz. *E. russica*, *caia* and *villica*, all of which differ so much in the form of the palpi that they belong to separate divisions, and may hereafter be thought, with the other analogous foreign species, to constitute as many good genera. Figs. 5. and 5 a. are the palpi of *E. russica*, to show their difference from those of the type *E. caia*, which are given at 4. and 4. a. It is a little singular that *E. russica*, which does not associate so well with the type as *E. villica* by analogy, should agree much better with it in structure, the palpi of the last-mentioned species being terminated by a long cylindric joint, which is nearly naked. *Phalæna Plantaginis* Linn., which has hitherto been included in *Eyprepia*, is inadmissible from the great dissimilitude of the palpi, the first and third joints of which are nearly globose.

The three species found in this country are amongst the most beautiful of our Moths. *E. caia*, which is very common in our gardens, (especially in the caterpillar state, when it is seen rambling over the vegetables in every direction,) for the richness and contrast of its colours, as well as the boldness of its markings, is perhaps equal to any other European species. *E. villica* is equally handsome, but it does not possess that richness and harmony of colour so peculiar to the last species: these two, from their spots, are called Tiger Moths. *E. russica*, being the rarest, has been selected for the plate. The female, contrary to most Moths, is smaller than the male and far more rare. The former sex I have taken flying in the day amongst furze-bushes and broom at Coombe Wood, Surry, at the end of June. The caterpillar is thickly covered with reddish brown hairs, has a yellowish line down the back spotted with red, and a row of white spots along each side. A figure of it may be seen in Kleeman's Ins. Bel. tom. i. tab. 20. f. 2. It is probably, like its congeners, a general feeder, as several plants are mentioned for its food.

Ulex Europæus (Common Furze or Whin) is the plant figured.



Bot. J. Curc. Linn. Pl. 1. 1825

Eurydia

EULEPIA CRIBRUM.¹¹

The gray spotted Footman.

ORDER Lepidoptera. FAM. Tineidæ ^{Bombyx calli cheloneuræ} Leach.*Type of the Genus* * *Bombyx grammica* Linn.EULEPIA nob. *Bombyx* Linn., *Fab.*, *Haw.* *Lithosia* Lat., *Leach.**Antennæ* setaceous composed of about 40 joints covered above with long scales bipectinated in the *males*, pilose, each branch terminated by 2 bristles (fig. 1.) : simple in the *females*, with two bristles arising on both sides from each joint (2.)*Labrum* and } attached to the clypeus.
Mandibles }*Maxillæ* short, broad, flat, not much longer than the head (3.)*Labial palpi* 2, very short, sparingly clothed with scales (4.) : 2- or 3-jointed, 1st joint long curved upward, 2nd and 3rd short of equal length (4. a. with the scales removed.)

Head rather small, thickly covered with hairy scales. Wings oblong, incumbent, convolute, inferior ones much folded. Thighs long and slender; anterior tibiæ short with a large spine on the middle of the internal side, 2nd pair terminated by spurs; posterior with 2 pair of spurs. Tarsi 5-jointed. Claws obscure. Pulvilli distinct (8 a fore leg.)

CRIBRUM Linn. *Syst. nat.* 2. 831. 76. *Fab. Ent. Syst. t.* 3. pars 1. p. 487. n. 248.

Pale cinereous minutely spotted with black. Superior wings with 2 interrupted longitudinal stripes diverging from the base, and 5 bent irregular transverse rows of large spots, and 6 long spots at the posterior margin, 4 black spots upon the thorax, a row down the back and each side of the abdomen which is croceous at the apex, inferior wings fuscous, darkest at the margin. Antennæ legs and under side fuscous. Some specimens have a much greater portion of black than others.

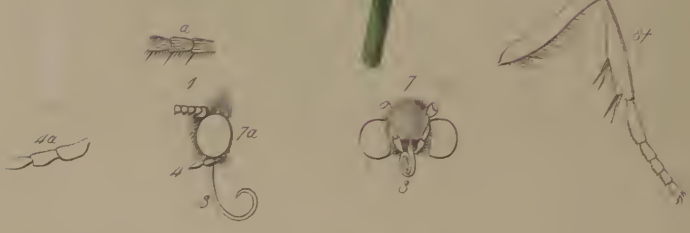
*In the Cabinets of Mr. Dale and the Author.*THE short *Maxillæ* and pectinated *Antennæ* of the males of this genus induced me at first to include it amongst the *Arc-tiadæ* : but the shape of the wings, their disposition when at rest, the short palpi, and the general habit of the species, have* The dissections are made from *E. Cribrum*.¹¹ *Bucc. J 117*

determined me to include it, together with the *Lithosiæ*, amongst the *Tineidæ*, which accords with the ideas of Latreille in his *Genera Crustaceorum*, &c. v. 4. p. 221.

As it is clear that these species connect two families, the necessity of forming them into a genus will be obvious: the name *Eulepia* alludes to the pretty disposition of the coloured scales in the upper wings.

Eulepia Cribrum has never before been described or figured in any British work; and I am indebted to the assiduity and kindness of my friend, J. C. Dale, Esq., for the specimens that enrich my cabinet, as well as for those which were given to me to make the dissections necessary to illustrate the genus. Mr. Dale says they settle much upon heath in particular spots, as well as upon the stalks of grasses, with their wings closed round them like *Bombyx pulchella* Linn. (*Deiopeia pulchra* Steph.), and the true *Lithosiæ* and *Crambi*. Several males have been taken by Mr. Dale in different years, the end of June and beginning of July, upon Parley Heath, Hampshire; and two females were captured on the same ground about the middle of June last year: Mr. Bentley has also taken the male near Ringwood, in the same county. A specimen of the male is figured in the plate; the females differ only in having a larger abdomen; the larva is at present unknown. Of the other species *E. grammica*, which is equally rare, (the larva of which is well known, is found in May, and is a general feeder,) specimens have been taken at Windsor in October, which are now in the cabinets of the British Museum and Mr. Stephens: Mr. Donovan also found it in September near Manachty in the Isle of Anglesea, and has figured it in his *British Insects*, v. 13. pl. 450.

Alopecurus agrestis (Field Fox-tail grass) is given with the insect.



Illustr. by J. ...
"Seneçon jacobin"

Bonn 18. 17. 1792

Euchelina — (CALLIMORPHA) JACOBÆÆ.

The pink Underwing or Cinnabar Moth.

ORDER Lepidoptera. FAM. Lithosiidæ. *Bombus (no III) the Cinnabar*

Type of the Genus, Phalæna Jacobææ Linn.

CALLIMORPHA Lat., Goda., Curt.—Lithosia Och., Haw.—Bombyx Fab.—Noctua Linn.

Antennæ inserted close to the eyes on the crown of the head, short, slender and capillary, clothed with scales, pubescent beneath in the male, with a row of short bristles on each side, every joint producing two bristles (1 a).

Maxillæ considerably shorter than the antennæ and spiral (3).

Labial palpi small, short, porrected nearly horizontally, clothed with scales, longest on the basal joint beneath, triarticulate, basal joint the stoutest, 2nd a little shorter, 3rd of the same length ovate-conic (4 a).

Head small, rounded and clothed with short hairy scales: eyes globose lateral and prominent: ocelli 2, placed behind the antennæ (7 a profile, 7 front view of head). Thorax small. Abdomen linear and obtuse in the male, stouter shorter and somewhat conical in the female.

Wings forming a triangle when at rest. Legs rather short and stout: tibiæ short, anterior with an internal spine, the others with a pair of short stout spurs at the apex, the posterior dilated towards the extremity, with a pair of spurs also below the middle (8 †): tarsi of equal length and 5-jointed, the posterior a little the stoutest: claws and pulvilli small.

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal feet, changing to chrysalides under ground.

Pupæ short obtuse and strongly punctured, unarmed at the apex.

JACOBÆÆ Linn.—Curt. Guide, Gen. 823. 1.

Pale dull black, head and thorax with a deep blue tint: superior wings with a bright sanguineous stripe parallel to the costa but not reaching the apex, with an abbreviated one on the interior, and 2 spots of the same colour on the posterior margin: inferior wings sanguineous, deep rose colour at the base, the superior margin and the cilia as far as the anal angle pale black.

In the Author's and other Cabinets.

It has been long known that the most decided marks of distinction in the Bombycidæ, are the pectinated antennæ of the males, and the imperfect development of the proboscis or maxillæ, which are formed of two flat and not spiral lobes, or altogether wanting, as in many of the Arctiidæ, whereas the Lithosiidæ are characterized by a long spiral proboscis, and

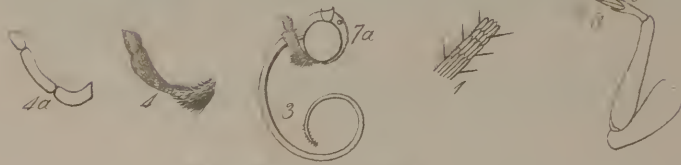
*1/2 Dec II 120. Lucas Ann S E F, 1888 p. 134 (La chenille orange
ou sanguinolente) Guenee Ann S E F, 1868 p. 115. var. fusca de
Succia aquatica -*

simple antennæ in both sexes. With such clear distinctive characters, therefore, it is a little extraordinary to find Lepidopterists placing *N. Dominula* in one family, and *N. Jacobææ* in the other, for they both perfectly agree in most particulars, and it is not at all clear that they do not belong to the same genus.

Callimorpha was established by Latreille, and contains the beautiful insect figured, which has received its specific name from the plant on which it feeds, and wherever the Ragwort is found, the handsome caterpillar of the *C. Jacobææ* is also to be met with, sometimes in incredible numbers. From this circumstance the Ragwort is commonly known in Suffolk by the name of Canker-weed. At the beginning of last July they were in immense numbers in the neighbourhood of Thetford: the greater portion of them were at that time full grown. They did not feed upon the leaves, but ate off the flowering buds just before opening, as represented in the plate. When about to change to pupæ, they either conceal themselves under the moss or vegetation on the surface, or bury themselves. I have dug them out in sandy situations, and am not aware that they spin any web or cocoon. The pupa is remarkable for its short blunt figure, and is destitute of a spine or hooks at the tail. I have taken the moth in abundance the beginning of July under the Cliff at Dover. Donovan says, "the fly may always be found in plenty in June, the Caterpillars in July and August," and represents the pupa in a web upon the plant, which I should think is incorrect. As there is a long succession of Caterpillars, I believe even to October, and as they remain in the chrysalis state during the winter, the appearance of the moth is regulated probably by the temperature of the following spring, and the consequent appearance of the Ragwort in flower.

The red portions of the wings, it ought to be observed, are sometimes of a yellow colour. The moth will fly in the day if disturbed, but is heavy on the wing. It feigns death when captured, and piercing it with a pin will not induce it to show any symptoms of life; but a transparent yellowish liquid issues from the wound which soon congeals. Mr. Haworth says, "It is so extremely tenacious of life that it is difficult to destroy it without spoiling its beauty. I know of no moth," he adds, "of the same size that equals it in that respect." He also remarks that "the underside of this species almost exactly corresponds with the upper! This in European moths is a very rare occurrence."

The Plant is *Senecio Jacobææ* (Common Ragwort).



Del. by B. Curtis June 1767

Ornithoglossum

DEIOPEIA PULCHRA.*

The crimson speckled Footman.

ORDER Lepidoptera. FAM. Tineidæ Leach.

Type of the Genus Bombyx pulchella Fab.

DEIOPEIA Steph. Mss.—Tinea Linn.—Bombyx Fab., Hüb.—Lithosia Lat., Haw.—Eyprepia Och.

Antennæ alike in both sexes, remote, inserted on the crown of the head near the eyes, rather short, hairy beneath, covered with long scales above, each joint producing a bristle on each side (fig. 1).

Labrum small, subovate.

Mandibles subtrigonal ciliated internally.

Maxillæ spiral, as long as the antennæ, very setaceous, producing only a few tentacula at the apex (3). "Palpi exceedingly minute, biarticulate." Savigny.

Labial palpi as long as the head, porrected, remote at the apex, covered with rather short scales (4); 3-jointed, basal joint the most robust, 2nd the longest linear, 3rd short ovate, truncated obliquely (4 a).

Head short, transverse, covered with flat scales. Eyes small. Ocelli 2 (7 a). Wing deflexed, forming a triangle when at rest; superior long and narrow, inferior ample, much folded. Abdomen rather long and conical, somewhat acute in the females and slightly tufted in the males. Legs and Coxæ not very long. Tibiæ; anterior scarcely longer than the basal joint of the tarsus, producing a flat spine on the internal side, 2nd pair terminated by a pair of short spurs, 3rd having 2 pair of short spurs. Claws simple, distinct. Pulvilli small, (8, a fore leg).

Caterpillars hairy, with 6 pectoral, 8 abdominal and 2 anal feet.

PULCHRA of Authors.—pulchella Linn. Syst. Nat. 2. 884. 349.—Haw. Lep. Brit. 150. 11.

Head thorax and upper wings pale straw colour: antennæ and legs brown: eyes black. Thorax spotted with yellow and black, 2 black spots being on the anterior and 4 on the lateral scales and 3 down the centre. Superior wings with 5 curved interrupted strigæ formed of black spots, between which are several larger scarlet spots of various forms. Abdomen and inferior wings milky white, the former fuscous at the apex, the latter with a sinuated black fimbria, the transverse nervure near the centre of the wings also blackish.

In the Cabinets of Mr. Dale, Mr. Stephens, and Mr. Vigors.

* Bore U 119

THIS beautiful moth, which is distributed over every part of southern Europe, is also an inhabitant of Asia and America. In this country it is extremely rare, and it is worthy of remark, that it has always made its appearance on the sea coast; the first specimen discovered in this island (a female), was taken in Yorkshire, and was figured in the *Introduction to Entomology*; the next specimen was found in a field near Christchurch, Hampshire, the end of September, by J. C. Dale, Esq. and two others have been since taken, one the middle of September, the other the beginning of October, in a stubble field at Hove near Brighton, by Mr. Brown*, who observed that they frequently settled, flying only short distances;—these are in the possession of J. F. Stephens, Esq. to whom I am indebted for the loan of the fine male, represented in the plate.

The caterpillar of *D. pulchra*, which is copied from Hübner, feeds* upon *Heliotropium europeum*, *Solanum tomentosum* and *Myosotis arvensis* (Field Mouse-ear), which last only is indigenous to Britain, and is figured in the plate.

* Mr. Edward Brown lives in Jubilee Place, Brighton, and disposes of the insects that he collects.

* en France on trouve l'a chenille sur la digitale (Echium vulgare)
selon M. Stainton vivait en Angleterre Myosotis arvensis -



Paint by H. Curtis London Sept. 1. 1824

Dance II Pl. 26 fig 6

LITHOSIA MUSCERDA.

ORDER Lepidoptera. FAM. Tineidæ *Lat., Leach.*

Type of the Genus *Noctua complana* Linn.

LITHOSIA *Fab., Lat., Haw.* *Noctua* Linn. *Bombyx* Hüb.

Antennæ remote, covered with long scales above, hairy beneath, pectinated (under a lens), the pectinations arising from the centre of the joints on each side. (1. and 1. a.)

Labrum and *Mandibles* } attached to the clypeus.

Maxillæ long and spiral. (3.)

Palpi two, generally shorter than the head (7. a.); covered with various scales, the apex nearly naked (4.); 2-jointed, first joint long, cylindric, attenuated, curved upward, second joint small, somewhat rhomboid. (4. a.)

Head short, covered with close scales (not hairy in front). Eyes remote. Wings long, oblong, somewhat elliptic, incumbent or convolute. Inferior ones much folded. Anterior legs with the coxæ long and robust. Thighs very long and slender. Tibiæ short and slender. Tarsi 5-jointed. Pulvilli distinct. Claws obscure. (8. a fore-leg.)

MUSCERDA Hüb. *Bomb.* pl. 24. f. 103.

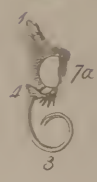
Fuscous tinged with pink and yellow, towards the costa pale straw colour; five irregular small black spots in the superior wings, the first upon the costa, the two following forming an oblique line towards the posterior margin, and two others near the centre.

In the Cabinet of Mr. Sparshall.

Two specimens of this extremely rare insect (drawn rather larger than the life) were found by Mr. Joseph Sparshall, at the end of June, upon the marshes at Horning, Norfolk, in ditches, floating on the water. The other species belonging to this Genus are, 1. *L. flava* Fab.; 2. *aurantia* Haw.; 3. *ochreola* Hub.; 4. *helveola* Hub.; 5. *complana* Linn.; 6. *griseola* Hub.; and 7. *quadra* Linn.

L. quadra will form a second division in this Genus, since the second joint of the palpus is as long as the first, and curved upward: *Bombyx pulchella* and *rubricollis* Fab., with some others, are included by that author and Latreille in the Genus *Lithosia*, which has occasioned the latter to state that the palpi are three-jointed, whereas Fabricius has described them as biarticulate: after dissecting several specimens of our Genus, and examining them most carefully, I can discover only two joints; *B. pulchella* and *rubricollis*, having three distinct joints in the palpi, must therefore be constituted into a new Genus.

The plant figured is *Alisma Plantago* (Great Water Plantain), var. *lanceolata*.



del. by Charles Spence

400.

NUDARIA MUNDANA.

The Muslin Moth.

ORDER Lepidoptera.

FAM. Lithosiidæ.

Type of the Genus, Bombyx munda Linn.

NUDARIA Haw., Curt.—Tortrix & Phalæna Attacus Linn.—Bombyx Fab., Hüb.—Lithosia Och.—Callimorpha Goda.

Antennæ more robust in the males than females; inserted close to the eyes, on each side of the head, rather short, slender and setaceous, clothed with scales and ciliated beneath; basal joint very long robust and clothed with long projecting hairs on the underside (1).

Maxillæ not quite so long as the antennæ, flat, slender and spiral (3).

Labial Palpi recurved, short and slender, clothed with scales (4), basal joint considerably the longest and stoutest, 2nd long and slender, 3rd short and subconic (4 a).

Head densely clothed with woolly hair in front. Eyes large prominent and globose (7 and 7 a). Thorax small and nearly naked. Abdomen rather short and slender in the males terminated by two large lateral lobes, with 2 smaller ones above; stouter and conical in the females. Wings subhyaline, pubescent, rather ample and rounded, forming a triangle when at rest, the superior covering the inferior (9, a superior wing to show the neuration). Thighs slender. Tibiæ, anterior with a small internal spine, intermediate and posterior spurred at the apex, the latter long and furnished also with a pair of spurs below the middle. Tarsi not long. Claws very minute. Pulvilli distinct.

Caterpillars clothed with long hairs; with 6 pectoral, 8 abdominal, and 2 anal feet?

Pupæ inclosed in a transparent cocoon mixed with the hairs of the Caterpillar.

MUNDANA Linn. Faun. Suec. 349. 1343.—Curt. Guide, Gen. 826. 2.—munda Haw. Lept. Brit. 156. 1.—nuda Hüb. pl. 17. f. 63 & 64.

In the Author's and other Cabinets.

THE genus *Nudaria* is most nearly related to *Lithosia* (pl. 36), not only in the character and habits of the larvæ, but in the perfect development of the maxillæ in the imago. At first sight it seems to be allied to *Psyche*, but there is no affinity either in the economy of the larvæ or the structure of the trophi.

I shall describe the three species that have been detected in Britain.

* *Bombyx* H. p. 108

1. *N. Hemerobia* *Hüb. pl. 17. f. 65.*

Smaller than the following: subdiaphanous, slightly iridescent, and tinged with ochre, without any spots.

I suspect Hübner's species is distinct, for I bred two females perfectly agreeing with his figure, not having a vestige of spot or marking on the wings. The specimens generally placed in cabinets, as the *N. Hemerobia*, appear to me to be nothing more than rubbed examples of *N. mundana*. These I have taken in the Isle of Wight the beginning of August, but the females above alluded to I bred the 28th June, from caterpillars that I had found only a short time before on a wall near Ambleside. I have seen a Trichopterous insect (probably the *Acentria nivosa* Ste. Gen. 762. of my Guide) which bears a striking resemblance to the female of this species.

2. *N. mundana* *Linn.—Curt. Brit. Ent. pl. 400.*

Subdiaphanous and iridescent, pale rosy-ochre: superior wings with a short brown streak at the base, an angulated brown striga before, and another beyond the middle, with a dot between them and a cloud of the same colour, but lighter, parallel to the posterior margin.

I am not aware that this pretty, but common, moth has been figured in any English work, neither have I met anywhere with representations of the caterpillar and pupa, for the drawings of which I am indebted to a lady who reared the moth from them. The larva feeds on the *Byssus botryoides*, which grows on the bark of trees. The moth is found from the end of June to the beginning of August.

3. *N. senex* *Hüb. pl. 55. f. 236 & 237.—Ste. pl. 18. f. 2.—Pagana Knock.—rotunda Haw.*

Wings shorter; superior, scarcely larger than the inferior. Antennæ of the male with the joints producing a bristle on each side: dull ochreous, superior wings with a brown spot at the base, 3 others in a curved line near it, a faint abbreviated striga near the middle, with a dark spot upon it, an irregular line of dots parallel to the posterior margin, the apex fuscous, cilia spotted with brown: inferior wings with a fuscous lunular spot approaching the costal margin and a faint transverse line below it.

This rare moth was first detected in Battersea Fields, and afterwards at Whittlesea Mere, where I took specimens the 21st July in the evening, alighting on the heads of grass in the marshes.

The Plant is *Eupatorium cannabinum*, var. β , (Hemp Agrimony).



PSYCHE RADIELLA.

The Woolly Case-bearer.

ORDER Lepidoptera. FAM. Arctiidæ *Leach.*

Type of the Genus, Tinea nitidella Hüb.

PSYCHE *Schr., Lat., Och., Goda, Steph.*—*Fumea Haw., Steph.*—*Nudaria Haw.*—*Tinea Hüb.*—*Bombyx Fab., Esp.*

Antennæ of the male inserted on the crown of the head, rather short, composed of about 20 joints, each (excepting the 3 basal and terminal joints) producing at the base 2 hairy rays, the basal joint the most robust, 2nd and 3rd very small (1): very short and simple in the female.

Maxillæ none.

Labial? *Palpi* forming 2 fleshy globular lobes clothed with long hairs (4).

Male very hairy. Head small. Eyes globular and granulated (7 a). Thorax subglobose. Abdomen rather short and obtuse. Wings subhyaline, not very thickly clothed with longish hairs: the nervures distinct; the cilia generally long and thick; superior obtuse and rounded. Female apterous. Thighs rather slender. Tibiæ; anterior simple, posterior (3†) more robust and hairy than the others, with a pair of spurs at, and another pair a little above the apex. Tarsi 5-jointed, basal joint the longest, especially in the anterior pair. Claws and Pulvilli minute.

Caterpillars living in cases formed of pieces of straw or leaves, in which the metamorphosis takes place; the 6 pectoral feet only perfect (A).

Obs. The dissections were taken from a male of the species figured.

RADIELLA *Curtis's Guide, Gen. 827. n. 3.*

Male black, with a glossy purple tinge, completely clothed with soft hairy pubescence. Antennæ with 18 joints, 14 only pectinated, the rachis rather whitish; head, thorax and body black; wings very thin, the nervures not strongly marked; superior with the costa black; the cilia long and dark; tarsi pale, inclining to testaceous.

In the Author's and other Cabinets.

It is a very extraordinary fact that the group of moths to which Psyche belongs, makes, in more than one respect, a near approach to the Phryganidæ; and I think they will be made eventually to connect the orders of Trichoptera and Lepidoptera; for whether we consider the larvæ and their remarkable economy, or the form of the perfect insects and the substance with which they are clothed, the resemblance is most striking. It will, however, require considerable additions of the Trichoptera to our cabinets, as well as a better knowledge of the structure of those we already possess, before this change can be safely attempted.

1) we...
1) we...
1) we...

Ochsenheimer makes some curious observations respecting our insects; he says the male caterpillar turns round in his case or sack before changing to a pupa, in order to be able to creep out at the hinder opening; this becomes necessary, I suppose, from the case being firmly attached by the other end to a leaf or tree. He also says that virgin females sometimes lay fruitful eggs.

Mr. Haworth having permitted me to inspect his cabinet, and having carefully examined the various figures referred to by different authors, I shall now give the result of my labours, in the enumeration of our species.

1. *P. fusca* *Haw.*, *Steph.* 2. *pl.* 18. *f.* 3. 4.—*hirsutella* *Hüb.* *t.* 1. *f.* 3.—*calvella* *Och.*

Mr. Ingpen has found the larvæ and pupæ in Hornsey Wood and at Highgate, on hazel, sallow and oak leaves, the end of June and beginning of July; the perfect insect appeared at the latter period: also the beginning of April and in June, on pales at Winchmore-hill.

2. *P. pulla* *Esp.* v. 3. *tab.* 44. *f.* 8.—*muscea* *Haw.*—*Bombycella* *Steph.* ?

Larger than *T. plumella* *Hüb.*; brownish and semitransparent. Esper's magnified figure 8* is like Mr. Haworth's specimen, which was taken by himself.

3. *P. radiella* *Curtis* *B. E.* *pl.* 332. ♂.—*plumistrea* *Haw.*

P. radiella is found in grassy places amongst Furze on commons, at Hampstead, Hertford, Epping and Dartford.

I have never seen a British example of Hübner's *T. plumistrea*; and the only specimen perhaps in this country of the *B. atra* of Esper (which Mr. Stephens refers to this species as well as Hübner's *T. muscella*), I took on the summit of the Puy de Dome in the centre of France. Esper's figure of it is admirable; and it is so different in character that it will form a division of our genus, if not a new one.

4. *P. plumella* *Hüb.* *t.* 1. *f.* 7.—*pectinea* *Haw.* 473. 2.

Antennæ of twenty joints in the male, sixteen having rays which appear to be shorter than in *P. radiella*, the wings are rather browner, and the superior scarcely so broad.

5. *P. pectinella* *Hüb.* *t.* 1. *f.* 5.—*plumea* *Haw.* ?

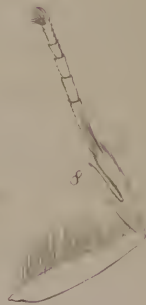
Mr. Haworth has but one specimen, which is wasted, and wants the cilia; it is the smallest of the genus, semitransparent and brownish.

6. *P. nitidella* *Hüb.* *t.* 1. *f.* 6. ♂.—*Haw.*—*Curtis* *B. E.* *pl.* 332 A, Larva.—*Carpini* *Schr.*

I once beat a male out of the hedge leading to Darent Wood, in July. The larva I have copied from Hübner, to show the curious structure of its case.

T. Bombycella of Hübner is not a British insect, at least Mr. Haworth's *F. muscea* is not that insect, as stated by Mr. Stephens.

The plant is *Ononis arvensis* (the Rest-harrow), upon which one of the species, I have understood, feeds.



CERAPTERYX HIBERNICUS.

The Irish Antler Moth.

ORDER Lepidoptera. FAM. Noctuidæ.

Type of the Genus, Phalæna Graminis Linn.

CERAPTERYX *Curt.*—Charæas *Ste., Curt.*—Episema *Och.*—Noctua *Hüb., Haw., Goda.*—Phalæna *Bombyx Linn.*

Antennæ comparatively longer in the male than female, bipectinated in the former, the rays ciliated and becoming shorter towards the apex, with 7 or 8 of the terminal joints simple (1 ♂): slightly pubescent only on the inside in the female.

Maxillæ as long as the antennæ, spiral and rather slender (3).

Labial Palpi porrected obliquely (4), clothed with scales, the apical joint apparent; triarticulate, basal joint subovate, 2nd longer subconic, 3rd as long as the 1st but slender, elliptic-conical (4 a).

Males smaller than the females. Head short and obtuse: eyes not very prominent. Thorax subglobose, not crested. Abdomen linear and tufted at the apex in the males, conical in the females. Wings slightly deflexed when at rest, margins entire, superior somewhat elongate-trigonate, the apex obtuse: inferior not large and rounded: cilia rather short and even. Tibiæ, anterior short with a long internal spine (8); the others with a pair of long spurs at the apex, the posterior with a pair below the middle: tarsi 5-jointed. Claws with a small tooth on the inside.

Caterpillars naked, with 6 pectoral 8 abdominal and 2 anal feet.

HIBERNICUS *Curt. MSS.*—*Curt. Guide, Gen. 832.*

In Mr. Walker's Cabinet.

As there is no described British moth that can be naturally associated with *N. Graminis* if it be separated from *Agrotis*, I have been compelled to give it a new generic name, especially as it does not seem to belong to the genus *Charæas*. From the true *Agrotis* it is distinguished by the masculine antennæ being pectinated much nearer to the apex, the wings are not horizontal and crossed I believe when at rest, neither are the superior so long and narrow, nor the inferior so ample, independent of the singular mark on the former resembling the antlers of a stag, from whence is derived the generic name I have proposed.

1. *C. Graminis Linn.*—*Don. 13. pl. 458.*—*Hüb. pl. 102. f. 480 & 481.*—*tricuspis, Esper var.*—*Hüb. pl. 30. f. 143.*

Reddish or fuscous brown, superior wings with the nervures pale, the central one ochreous, an oblong spot at the base of

the same colour, an oblong-conic spot towards the middle, and an oval or ovate one above it duller; beyond the middle is an ear-shaped or rhomboidal spot resting on a trifid character, both ochreous, these are relieved by a dark brown or black, with a line of spots of the same colour between the nervures near the posterior margin; inferior wings and abdomen blackish or fuscous, sometimes palest at the base, with a dark spot in the centre, the apex of the abdomen in the males ochreous, with a fuscous line along the middle in the upper wings.

This moth is a northern species, and occasionally the caterpillars commit sad ravages in pasture lands by devouring the roots of grass, as related by Linnæus, who states that they will not touch the *Alopecurus pratensis* nor the *Trifolium pratense* (pl. 181). Mr. Wailes has lately made some interesting remarks upon its habits, in the 2nd Part of the Entomological Magazine. I well remember when Mr. Dale and myself visited Keswick in 1827, that the grass on a large portion on one side of Skiddaw appeared dead, and I found numbers of the larvæ of *C. Graminis* crawling about. I used to find the moths flying close to the ground towards sunset in the neighbourhood of Norwich, also in meadows near Covehithe Suffolk, and in the flowers of the Ragwort at Inverary and Kinnordy, Scotland. Mr. Dale has sent me the following localities; July Aroquhar and Loch Long; Aug. near Carlisle canal, Ambleside and Skiddaw; near Manchester; Whittlesea Mere; Comb-wood; Devon; and Knowle Hill Dorset.

Rooks and pigs are very fond of the caterpillars and very useful in the destruction of them.

2. *C. Hibernicus* Curt. Brit. Ent. pl. 451. female.

Dull yellowish brown; superior wings with an elongated pale ochreous spot at the base above the central nervure, and another subelliptical one more towards the middle, with a lemon-shaped one above it, beyond the middle is a trapezoid spot resting on a trifid character, all of the same pale colour, some of them being partially relieved by a dark brown; between the nervures at the posterior margin are obscure, elongate-trigonal brown marks: abdomen and inferior wings fuscous; cilia pale ochreous.

I am fully aware that the *C. Graminis* is a most variable species, but as I have never seen one similar to the specimen figured I consider it may be a distinct species. It was captured last September in the county of Mayo, Ireland, by Henry Walker, Esq.

The Plant is *Pedicularis sylvatica* (Common Lousewort).



Pisum sativum May 1857

AGROTIS CINEREA.

The light feathered Rustic.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach.

Type of the Genus Noctua Segetis Fab.

AGROTIS Hüb., Och.—Noctua Linn., Fab., Lat., Haw.—Phalæna Don.

Antennæ inserted on the crown of the head close to the eyes, long setaceous, composed of numerous joints covered with scales above, strongly pectinated in the males especially towards the base (fig. 1); producing only bristles at the apex (1b): simple and pubescent beneath in the females (2).

Maxillæ as long as the *Antennæ*, robust, furnished with tentacula at the apex (3).

Labial palpi nearly vertical, divaricating, very robust, thickly clothed with long scales, the apical joint distinct, appearing truncated, the scales short (4): 3-jointed, coriaceous, basal and 2nd joints robust, of equal length, the former curved, the latter slightly attenuated and truncated obliquely; terminal joint small subovate, truncated obliquely (4 a).

Head short, trigonate, thickly covered with scales. Eyes not very large.

Ocelli 2, close to the eyes near the base of the head. Thorax subquadrate, densely covered with scales. Abdomen somewhat depressed, sublinear in the males, conical in the females. Wings horizontal and crossing each other when at rest; superior generally narrowed towards the base. Legs; anterior the shortest. Tibiæ; anterior very short with a flat spine on the internal side; 2nd and 3rd pairs ciliated externally near the base and spurred at the apex, the latter long and having a pair below the middle. Tarsi 5-jointed, anterior short, basal joint of the 4 posterior long. Claws and Pulvilli small (8, a hind leg). Larvæ with 6 pectoral, 8 abdominal, and 2 anal feet.

CINEREA Hüb. Noct. tab. 33. f. 155. mas. f. 156. fem.—Och. Schmet. v. 5. pars 1. p. 178.—denticulata Haw. 133. 95.—obscura Hüb. tab. 33. f. 157 & t. 104. f. 490. fem. var.

Male. Head and thorax cinereous, anterior margin of the latter and the antennæ brown. Abdomen cinereous ochre. Superior wings cinereous inclining to griseous in the centre, with 3 denticulated brown strigæ, the 1st next the base abbreviated; the 2nd not far from the base; the 3rd curved, approaching the posterior margin; a sinuated suffused ferruginous striga in the middle, close to which is an auriculate stigma; and parallel to the posterior margin which is dotted with black, an obscure fascia; cilia variegated. Inferior wings white tinged with ochre, a pale spot near the superior margin and another towards the centre; nervures fuscous; posterior margin spotted fuscous. *Female* darker.

In the Cabinets of Mr. Haworth, Mr. Stephens, and the Author.

Recd. in the Cabinet of Mr. Stephens. Dec 31. 1817.

It is difficult to frame characters that will perfectly embrace all the varieties of form that this group exhibits; nevertheless it will be found that unless it be very much divided, any alterations will not only be imperfect but useless: for instance, if the species figured were withdrawn on account of the form of the wings, *A. exclamationis* must be separated also for the more important difference in the antennæ; yet there is such a harmony in the habits of this last and the type, that we do not think it prudent at present to go beyond making divisions of them, in the following order.

A. Antennæ pectinated in the males, I. nearly to the apex.

1. *A. nigra* Haw.—albicolon *Fab.*? 2. *A. fusca* Haw. 3. *A. cinerea* Hüb., *Nob.*

II. pectinated only half their length.

- | | |
|---|--|
| 4. <i>A. suffusa</i> Hüb., <i>Och.</i> , <i>Haw.</i> —spinifera <i>Vill.</i> , <i>Haw.</i> —spinula <i>Don.</i> 10. 345. 2 & 3. | trata, monilea, cataenata and pectina of <i>Lepidopt. Brit.</i> may be varieties of <i>Segetum</i> . |
| 5. <i>Æqua</i> Hüb.—margaritosa <i>Haw.</i> —majuscula <i>Haw. var.</i> ? | 9. <i>A. affinis</i> . |
| 6. subterranea <i>F.</i> , <i>Haw.</i> 171. 31. | 10. clavigera <i>Haw.</i> —subfusca <i>Haw. var.</i> ? |
| 7. monostigma <i>Nob.</i> from Mr. Plastead's collection. | 11. pupillata <i>Haw.</i> |
| 8. <i>Segetum</i> Hüb., <i>Och.</i> — <i>Segetis F. Obs.</i> corticca, connexa, venosa, spinula, nigricornuta, suba- | 12. sagittifera Hüb., <i>Haw.</i> , <i>Och.</i> —clavis <i>Don.</i> 10. 340. 3. |
| | 13. <i>Hibernica</i> <i>Haw. Mss.</i> |
| | 14. pascua <i>Nob.</i> Isle of Wight. |

B. Antennæ of the males producing fascicles of hair only.

- | | |
|---|---|
| 15. <i>A. cespitis</i> Hüb. Dartford Common. | 21. <i>A. nigricans</i> <i>L., F., Haw.</i> —fumosa <i>F., Hüb., Haw.</i> ? |
| 16. autumnalis <i>Nob.</i> October. New Forest. Chas. Lyell, Esq. | 22. valligera <i>F., Hüb., Haw.</i> |
| 17. exclamationis <i>Linn., Haw.</i> | 23. obelisca Hüb.?—obeliscata <i>Haw.</i> |
| 18. picea <i>Haw.</i> 220. 170. | 24. albilinea <i>Haw.</i> — <i>Tritici Linn. Cab.</i> ? |
| 19. corticca Hüb., <i>Och.</i> —sordida Hüb., <i>Haw.</i> | 25. lineolata <i>Haw.</i> |
| 20. ruris Hüb., <i>F.</i> ? <i>Haw.</i> —dubia <i>Haw. var.</i> ? | 26. radius <i>Haw.</i> |
| | 27. radiolus <i>Haw. Mss.</i> |
| | 28. subgothica <i>Haw.</i> |

For the beautiful specimen of the male figured, I have to acknowledge my obligations to the Rev. C. S. Bird, who took it the middle of June; it has also been taken in clover-fields the beginning of the same month.

We are not acquainted with the larvæ of this genus, but they are probably great enemies to the agriculturist and the gardener; for the caterpillars of *A. segetum* devour the roots of corn; those of *A. valligera* feed upon grass, keeping under ground during the day; *A. exclamationis* upon the groundsel; and Mr. Haworth is of opinion that some of them called Bots by gardeners destroy the roots of lettuces and celery.

The plant is *Vicia sativa*, var. *angustifolia* (Common Tare or Vetch, with narrow leaves).

d. III (N. 54)



grammesia CARADRINA BILINEA.*

The dark treble-lines.

ORDER Lepidoptera.

FAM. Noctuidæ. *III - ...*

Type of the Genus, Caradrina Morpheus Och.

CARADRINA Treit., Curt.—Segetia and Grammesia Ste.—Noctua Linn., Fab., Hüb., Haw., Goda.

Antennæ inserted close to the eyes, moderately long, tapering to a fine point, scaly outside, pectinated internally in the males (1), the joints forming numerous semiovate transverse pubescent lobes (♂).

Maxillæ not so long as the antennæ, stout spiral tapering, furnished with numerous tentacula at the apex (3).

Palpi porrected obliquely, clavate, densely clothed with scales, the apex of the 3rd joint apparent (4), triarticulate, basal joint long, cleaver-shaped, 2nd longer slightly attenuated, 3rd small ovate conic (a).

Head short: eyes prominent and globose. Thorax slightly crested before. Abdomen short, obtuse and tufted in the male, conical at the apex in the female. Wings slightly deflexed in repose, superior rather narrow, truncated obliquely, the apex rounded: inferior trigonate-ovate, the margin a little waved. Legs stout, anterior short: tibiæ, anterior very short, with an internal spine, densely clothed with scales; intermediate and hinder with long spurs at the apex, the latter hairy with a pair of spurs below the middle: tarsi 5-jointed, with series of short spines beneath: claws and pulvilli minute (8 †).
Obs. The dissections are made from *N. trilinea* Hüb.

Larvæ smooth, with 6 pectoral, 8 abdominal and 2 anal feet. Hüb.

BILINEA Hüb.—Curt. Guide, Gen. 836. 12.

Grey, antennæ and tips of palpi ochreous, head and thorax greyish, superior wings with 4 dark strigæ all margined with ochre, excepting the 3rd, which is indistinct and passes through an obscure auriculate spot, the 1st striga is close to the base and abbreviated, the 2nd sinuated, the 4th oblique; inferior wings pale fuscous, the cilia and apex of the abdomen ochreous.

In the Author's and other Cabinets.

THE typical species of Treitschke's genus *Caradrina* approach the *Graphiphoræ* of Hübner, whilst those of his fam. D form the transition to *Mythimna*: the males of these are distinguished by their serrated antennæ.

1. *Alsines* Hüb. 125. 577.—*implexa* Step. Hübner's *N. implexa* 88. 414. referred to by Stephens is an *Apamea*?

Gardens near London, the New Forest, and Devon.

2. *sordida* Haw. 207. 131. July, gardens.

3. *Morpheus Och.* Hertfordshire and Devon.—*Sepii Hüb.* 34. 161.—*pulla? Beck. Linn. Trans. v. 2. pl. 1. f. 9.*
End of June, gardens, lanes, and borders of woods.
4. *Cubicularis Hüb.* 89. 417.—*4-punctata Fab.—Segetum Esp.*
May, June, and July, common in hay-fields and about hay-ricks, also on willows, under the bark of which I have found the Caterpillars in January.
5. *egens Haw.—Taraxaci Hüb.? 125. 575.—Blanda Och.*
July, gardens.
6. *redacta Haw.—Wood, 197.—Xanthographa Haw.—ambigua Step.?*
July, Darent and other woods round London. I found several on Stanmore Common on the flowers of *Teucrium Scrodonia*, pl. 560.
7. *Blanda Hüb.* 34. 162.—*superstes Och.*
July, gardens, meadows, &c.
8. *glareosa Och.—I-intactum Hüb.* 28. 130. has never been found in England; and the *N. glareosa* of Stephens, which is the *N. Hebræica* of Hüb., agrees better with the *Orthosia*.
- SEGETIA *Step.—MYTHIMNA Och. Fam. C, v. 2. p. 177.*
9. *Xanthographa Hüb.* 29. 138.—*tetragona Haw.*
August, common everywhere in waste places. The larvae feed through the winter; Rev. R. A. Burney.
10. *neglecta Hüb.* 34. 160. This species was supposed to have been lost, until I discovered it flying over the fern on some rising ground near Lyndhurst, in company with my friend Mr. Dale, 22nd August 1822; he has since taken it on Parley Heath in September.
11. *lævis Hüb.* 34. 163.—*ORTHOSIA Och.*
I have Plastead's specimen described by Haworth, which is certainly not a variety of *C. Alsines*, being closely allied to *C. neglecta*; neither is it Wood's fig. 200. Taken in July near Darent Wood.
12. *bilinea Hüb.—Curt. B. E. pl. 651 ♂.—GRAMMESIA Ste.*
3rd June, in grass, Epping; end of June, Coomb and Birch Woods, also near Reading; 21st June in the garden, G. Wootton, Mr. Dale; Mr. Lockey takes it near Bath in plenty, it being attracted by his lamp.
13. *trilinea Hüb.* 45. 216.—*Quercus Fab.—trigrammica Esp.—approximans Haw. var.—semifuscans Haw. var.*
The Caterpillars feed upon the Plantain and are full-grown in October, when according to Mr. Dahl they spin a web in common to pass the winter in. June Ambleside and Regent's Park, J. C.; Coomb and Darent Woods, New Forest, G. Wootton, and Devon.

The Plant is *Plantago media*, Hoary Plantain.



En las Pl. 7. 1820

ORTHOSIA LUNOSA.

The Lunar Underwing.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. *Orthosia lunosa*

Type of the Genus *Noctua instabilis* Fab.

ORTHOSIA Och.—*Noctua* Linn., Fab., Esp., Hüb., Haw., Don.

Antennæ inserted on the crown of the head close to the eyes, rather long and setaceous, composed of numerous transverse joints, covered with scales above pectinated in some males, in others only serrated beneath, each joint being ciliated with bristles (1): simple in the females (1 a).

Maxillæ spiral, robust, considerably shorter than the antennæ, furnished with tentacula towards the apex (3).

Labial palpi porrected nearly horizontally, short, robust, densely clothed with scales, long and bristly beneath (4); triarticulate, basal joint robust slightly curved, 2nd longer but not so stout, nearly straight and oblong, 3rd almost as long as the 1st, somewhat pear-shaped (4 a).

Head densely covered with long scales above. Eyes large. Ocelli 2 (7*). Thorax subglobose covered with rather woolly scales. Abdomen short, oblong, very obtuse and tufted at the apex in the males, conical and sometimes pointed in the females. Wings forming a triangle when at rest placed nearly horizontally, and sometimes incumbent, superior long, sometimes with the apex slightly acuminate; inferior rather small. Legs, posterior as in *Agrotis*. Tibiæ, anterior with a short, flat, broad and acute spine on the internal side. Tarsi 5-jointed, basal joint the longest. Claws minute. Pulvilli distinct (8, a fore leg).

Caterpillars smooth and naked, with 6 pectoral, 8 abdominal and 2 anal feet.

LUNOSA Haw. Lep. Brit. p. 230. n. 203.

Ochreous brown with a cinereous tinge. Antennæ yellowish white. Superior wings slightly acuminate at the apex, the nervures and costa whitish; a brown oblique oval spot with a pale margin, and a larger reniform one near the disc, through which runs an undefined dark bent striga; beyond the middle is a whitish curved striga, and nearer the cilia a pale sinuous one, internally with black spots elongated at the costa, the cilia is spotted with brown and at the base is a row of black dots, alternating with the nervures. Inferior wings shining, yellowish white speckled with black, a lunular fuscous mark towards the middle, an interrupted fimbria forming 2 large and 4 smaller spots of the same colour; the margin spotted with fuscous also, the cilia ochreous. Abdomen brown, darkest at the base, the margins of segments ochreous deepest at the apex.

OBS. This is a most variable species; the above description taken from a specimen of the usual colour, differs very much from the variety figured.

In the Cabinets of Mr. Haworth, Mr. Bird, and the Author.

* *Noctua lunosa*

ORTHOSIA, like *Agrotis*, has the antennæ in some males much more pectinated than in others; the most obvious characters are the woolliness of the head and thorax, the shortness of the bodies and the small under wings; these, however, are considerably modified in the second division.

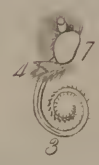
The British species may be thus divided; but it must be observed that those with * may not be correctly placed, as I do not possess specimens.

ORTHOSIA. *Agrotis*

A. The apex of the superior wings rounded.

1. *subplumbea* *Haw.*—*gracilis* *Fab.*? *Hüb.*?—Beginning of April, on trunks of Oaks.
2. *instabilis* *Fab.*, *Hüb.*—*N. nebulosa*, *subsetacea*, *angusta*, and *fuscata* *Haw.* are varieties.—b. April.
3. *munda* *Fab.*, *Hüb.*—*geminata* *Haw.* ditto.
- *4. *bimaculata* *Haw.* ditto.
5. *sparsa* *Haw.*—End of April, fallows and ozier beds.
6. *pallida* *Haw.*—April, trunks of trees.
- *7. *concolor* *Haw.*
8. *stabilis* *Fab.*, *Hüb.*—*Cerasi* *Fab.*? *Haw.*—b. April, trunks of willows.
- *9. *juncta* *Haw.*—*Albin.* 75. *c. d.*—b. April, trunks of willows.
10. *cruda* *Wien.*, *Verz.*—*pulverulenta* *Esp.*—*ambigua* *Hüb.*—*nana* *Haw.*—b. April, trunks of willows.
- *11. *pusilla* *Haw.*—March, trunks of Oaks.
12. *miniosa* *Hüb.*, *Sepp.*, *Haw.*—End of March, weedy banks.
- B. The apex of the superior wings slightly acuminated.
13. *macilenta* *Hüb.*, *Haw.*—September, Elms.
- *14. *rufannulata* *Haw.*
15. *flavilinea* *Haw.*—End of Dec.; trunks of trees, New Forest, C. Lyell, Esq.
16. *Lota* *Linn.*, *Esp.*, *Sepp.*—September, October, thickets and trunks of trees.
17. *Upsilon* *Nob.*—*Ypsilon* *Hüb.*—*corticea* *Esp.*—*fissipuncta* *Haw.*—July, trunks of willows.
18. *lunosa* *Haw.*—*Curt. Brit. Ent. pl.* 237.—Sept., Coomb Wood.—The beautiful variety of the female figured was presented to me by my esteemed friend the Rev. C. S. Bird, F.L.S. who took it with other specimens at Burghfield near Reading.
19. *sphærolatina* *Haw.*—e. September, skirts of woods.
20. *pistacina* *Fab.*, *Hüb.*—*Lychnidis* *Fab.*, *Hüb.*—Sept. ditto.
- *21. *lineola*.—*Don.* 10. 360. 2. ditto.
22. *ferrea* *Haw.* ditto.
- *23. *venosa* *Haw.* ditto.
24. *Litura* *Linn.*, *Hüb.*, *Esp.*—*polluta* *Esp.*—e. Sept. ditto.
25. *Hebræica* *Hüb.*—*I-geminum* *Goda.*—September, Birch Wood and New Forest.

The plant is *Ophrys* (*Herminium*, Brown) *Monorchis* (Yellow or Musk *Ophrys*), for specimens of which I am indebted to Sir John Tylden.



Painted by J. Curtis July 4 1821

GLÆA SUBNIGRA.

The black Chestnut.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Leach.**Type of the Genus, Noctua Vaccinii Linn.*GLÆA Hüb.—*Cerastis Treit.*—*Noctua Linn., Fab., Haw., Don.*

Antennæ inserted close to the eyes on the crown of the head, slender and setaceous, covered with scales above, pubescent beneath, joints transverse, each producing a few fine bristles (1). *Maxillæ* spiral, shorter than the antennæ, robust, slightly pubescent and furnished at the apex with long tentacula (3).

Labial Palpi porrected nearly horizontally, short, thickly clothed with scales (4); triarticulate, basal joint long robust and slightly curved, 2nd rather longer subfusiform, 3rd minute ovate-truncate (4a).

Head *small, thickly clothed with rather long scales. Ocelli two (7, the head in profile). Thorax not crested. Abdomen very much depressed, the sides margined, the end truncated and ciliated. Superior wings truncated, the posterior angle rounded. Legs rather robust. Tibiæ, anterior with a spine on the internal side, the others spurred at the apex, the posterior pair having 2 spines below the middle. Tarsi 5-jointed, basal joint the longest. Claws minute and bifid (8, a fore leg).*

Caterpillars, *some hairy, others naked, with 6 pectoral, 8 abdominal, and 2 anal feet.*

SUBNIGRA *Haw. Lep. Brit. p. 234. n. 215.*

Dark chestnut. Superior wings with a slight bloom; a striga at the base, a waved one before and another beyond the middle, with an oval and an ear-shaped paler spot near the centre, the latter with the lower extremity blackish; 4 pale dots on the costa and an ochreous fimbria at the posterior margin, with 6 or 7 ferruginous spots; the base of the cilia of the same colour, the apex blackish. Abdomen and inferior wings fuscous ochre, the latter with an obscure spot and transverse line darker, the cilia ochraceous dark at the edges.

In the Cabinets of the British Museum and Mr. Haworth.

THE continental writers have found it expedient to divide many large families of insects into various genera, and in none was this become more necessary than in the Noctuidæ; many of these groups, however, are very artificial, and it frequently

happens that the first and last species are as nearly related to other genera, as to that in which they are included; and although this is frequently a proof of the natural arrangement of the subjects, there are those who, considering it a defect, have adopted the pernicious practice of giving every thing a generic name which does not strictly accord with the type: as, however, it is the union, not the separation of groups that is so desirable, it becomes the duty of every one to dispute such innovations; since nothing is so likely to retard, if not to overthrow science, as encumbering it with unnecessary names. In the Catalogue I am now publishing, some of these subgenera have been registered, but they will not form any part of the present work.

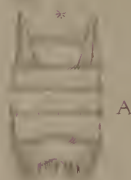
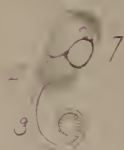
In the genus *Glæa*, the strongly depressed bodies with reflexed sides present a character that marks all the species excepting *G. rubricosa*, which has the antennæ also more hairy beneath; and the caterpillar of *G. rubiginea* is hairy like some of the Bombycidæ, whilst in all the others I believe they are quite naked.

The British species are

1. *G. rubricosa* *Hüb. Och.*—*mista* *Hüb.*—*rufa* *Haw. Ent. Trans. tab. 5. f. 1.*—End of March; banks of nettles.
2. *rubiginea* *Hüb. Haw.*
3. *Vaccinii* *Linn. Haw. Goda.*—m. Sept. skirts of woods.
4. *spadicea* *Hüb. Haw.* ditto ditto.
5. *polita* *Hüb. Haw.* ditto ditto.
6. *subnigra* *Haw.*—*Curtis Brit. Ent. pl. 268.*
7. *satellitica* *Linn.*—*Don. 5. 168.*—e. Sept. skirts of woods.

The plant is *Orchis* (*Gymnadenia* Brown) *conopsea* (Red-handed *Orchis*). Communicated by Professor Henslow.

635



3000 III 11 58 fig. 5

SCOPELOSOMA SATELLITIA.

The Satellites Moth.

ORDER Lepidoptera.

FAM. Noctuidæ.

Type of the Genus, Noctua Satellitia Linn.

SCOPELOSOMA Curt.—Glæa Hüb., Curt.—Cerastis Och.—Noctua Linn., &c.

Antennæ inserted on each side of the head close to the eyes, setaceous, the basal joint small, the following clothed with scales above, each joint beneath producing spreading hairs in the male (1); and simple bristles in the female.

Maxilla very much shorter than the antennæ, stout, setaceous and spiral, with long tentacula towards the apex (3).

Labial palpi short, scarcely reaching beyond the head, nearly horizontal, very scaly, obtuse, triarticulate (3 a), basal joint the stoutest, sublunate, 2nd the same length, subelliptic, 3rd small and ovate, perfectly concealed by the scales (4).

Head densely clothed with scales, which form a cone on the forehead; face long: eyes small and lateral: ocelli distinct. Thorax slightly crested in front. Abdomen depressed, nearly linear, the sides margined, with a long tassel of fine yellow hair on each side of the base beneath (A*); truncated at the apex in the male, more rounded in the female. Wings incumbent, superior elongated, the posterior margin convex and denticulated; inferior not large, the cilia slightly denticulated. Thighs short and densely clothed beneath with long hairy scales: tibiæ, anterior short with an internal spine, intermediate spurred at the apex, posterior rather short and stout, spurred at the apex with a pair of spurs, also a little below the middle: tarsi rather stout, especially the anterior; posterior as long as the tibia, basal joint long, the remainder short.

Larvæ smooth, cylindric, with 6 pectoral, 8 abdominal and 2 anal feet. Pupa inclosed in a sort of cocoon formed of the earth in which it is buried.

SATELLITIA Linn.—Curt. Guide, Gen. 839^b.

Ferruginous-ochre, superior wings clouded with bright brown, bearing 4 transverse lines, the basal one curved, 2nd waved, 3rd angulated, 4th waved and sinuated, between these is an ovate white or orange spot with a minute dot at each extremity, and beyond them a sinuated denticulated striga with a darker shadow inside, and a denticulated line at the base of the cilia: inferior wings fuscous, the cilia ochreous.

In the Author's and other Cabinets.

THE little group of Noctuæ which stands under the name of *Glæa*, comprises insects so dissimilar that they cannot with

propriety be included in the same genus; *G. rubricosa*, for instance, is different to *G. Vaccinii* in its contour and texture, and it has not a depressed abdomen, so that it appears to be more allied to *Orthosia*: *G. Satellitia* has elongated and dentated superior wings, the apical joint of the palpi is perfectly concealed, the tufts of hairs I have detected at the base of the abdomen in the males I have not been able to discover in any of the other species, and the habits of the caterpillar are very anomalous, for these reasons I have now separated this insect.

The larvæ of *S. Satellitia* are generally beaten from the oak, but according to Ochseneimer they are found also upon the pear-tree, beech, elm, raspberry and gooseberry; it is said that they come out to feed only in the night, like a great number of other caterpillars; and it is a remarkable fact that they will devour other larvæ if they be confined in a box together, and even those of their own species, an unnatural propensity in which they resemble the larvæ of *Cosmia trapetzina*, called *monsters* by collectors*. They vary materially in colour, but are generally, I believe, nearly black, like the figure in our plate, which is copied from Hübner; others are green or yellowish-orange, with a distinct white lateral line immediately below the spiracles, with many dots of a paler tint than the ground-colour upon each segment.

The moth has received its specific name from the two little dots, sometimes white, at others deep orange, which accompany the larger spot of the same colours on the disc of the upper wings: the generic name alludes to the brushes of hair at the base of the abdomen. *S. Satellitia* is by no means uncommon in this country, where it does not appear until the autumn, but in France it is found in July and August. I believe we never find it before the middle of September, but it remains to a very late period. Mr. Walton detected specimens on the yew-trees in Norbury Park the beginning of November, and I think Capt. Chawner has met with it as late in the year.

The Plant is *Arabis*, or *Turritis*, *hirsuta*, Hairy Tower-Mustard.

* Mr. J. Standish informs me that *Cucullia Scrophulariæ*, the Water Betony, *Rhizolita Lambda*, the Grey Shoulder-knot, and *Miselia Oxycantha*, Ealing's Glory, have the same carnivorous appetite.



Pimpinella veris
4. M. 13

(See by Charles L. ...)

TRIPHÆNA CONSEQUA.

The Bute Yellow Under-wing.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Lea.**Type of the Genus, Noctua Pronuba Linn.*TRIPHÆNA *Och., Treit., Curt.*—*Noctua Linn., Fab., Haw., Goda.*

Antennæ inserted on the crown of the head, close to the eyes, alike in both sexes, slender and setaceous, composed of innumerable joints, scaly above, pubescent beneath, and slightly bristly (1 the base).

Maxillæ very spiral, rather longer than the antennæ and robust, ciliated externally, and furnished with elongated glands towards the apex (3).

Palpi, labial porrected obliquely and generally lying close to the face, so as to form a triangle in profile, compressed, approximating, very horny, short, robust, and thickly clothed with short scales, the 2nd joint appearing somewhat obtrigonal, the scales forming an angle on the underside at the apex, the 3rd joint being just visible above (4); triarticulate, 1st and 2nd joints robust and curved, the latter a little the longest, 3rd small, conical (4a).

Head with the scales very thick and projecting a little in front. Eyes rather large, globose and prominent. Ocelli 2 (7, the head in profile). Thorax slightly crested in front. Abdomen flat above, margined, the apex somewhat truncated. Wings resting horizontally, one of the superior, covering the others, the inferior being much folded, the superior are generally elongated and more or less rounded at the apex. Legs robust: tibiæ with spiny bristles down the sides, anterior very short, with an internal spine near the base, middle and hinder pair with a brush of hair outside near the base; spurred, the latter with a pair of spurs near the middle: tarsi 5-jointed, with from 2 to 4 series of spines on the underside, basal joint the longest (8†, a hind leg).

Larvæ fat, smooth and naked, curling up when touched; with 6 pectoral, 8 abdominal and 2 anal feet. Pupæ subterraneous, smooth, naked, shining.

CONSEQUA *Hüb. Noct. tab. 23. f. 105.*—*Curtis's Guide, Gen. 843. 1.*

Brown, palpi reddish, crown of the head pale: superior wings comparatively short, narrow at the base and considerably broader at the apex, with the costa reddish; two pale strigæ towards the base, an oblique-oval and an auriculate stigma with pale margins and reddish centres towards the middle, beyond which are 2 pale sinuated strigæ, the nervures between them pale and bearing a row of dots as well as the posterior margin: inferior wings orange, fuscous at the base, the nervures fuscous, a black fimbria, narrow at the anal angle, curved above and reaching the centre, where it forms a crescent, the external edge indented and not touching the margin. Abdomen cinereous, the sides and apex ferruginous.

In the Author's Cabinet.

THE *Triphænæ* are all characterized by their beautiful yellow under-wings, bearing a black submarginal band. The Caterpillars feed only in the night, and conceal themselves during the day at the roots of the plants on which they feed. It is probable that they live through the winter, for I once saw a considerable number, belonging I think to this genus, beneath the ice which covered some meadows that were under water.

The following are British species:

1. *T. conseqna* *Hüb. Curtis's Brit. Ent.* 348.—*subseqna* *Hüb.* 23. 106. var.?

That my specimen is distinct from our other species, there is no doubt, for the superior wings are formed more like those of *Cerigo texta*, the stigmata are larger than in *T. orbona*, the fascia of the inferior wings is broader, and the superior margin beneath is black and not rosy: in colour it most resembles the *N. conseqna* of Hübner; his *N. subseqna* is more like *N. orbona*. On the 27th July 1825, two flew out of the heath that covers the hills at the back of Mr. Kean's house in the Isle of Bute, one of which I captured. It is probable that the third stigma is accidental, for the specimen is rubbed.

2. *T. orbona* *Fab. Don.* 10. 343. 2.—Comes *Hüb. Och.*

Common, from the end of June to the beginning of July, in gardens. The Caterpillar feeds on the *Plantago lanceolata*.

3. *T. Pronuba* *Linn. Don.* 9. 311.—*innuba* *Och.* var.

Very common, from the beginning of June to the middle of July, in gardens, hay-fields, and hedges, flying short distances when disturbed during the day. Mr. Lyell found one on Mont Blanc, above the height of perpetual snow, between the Cuviercle and Jardin, on the 7th of July 1818. The larva feeds on the Primrose, Violet, Shepherd's-purse, and a Senecio, but not I believe on the roots.

4. *T. interjecta* *Hüb.* 23. 107.—*Goda, pl.* 59. 1.

June and end of July, open parts in Birch, Darent, and Coomb-woods, and in Norfolk.

5. *T. Janthina* *Fab. Hüb. Don.* 10. 343. 1.—*Domiduca* *Fues.* 3. 1. 16.

End of July and middle of August, Birch-wood, Epping-forest, and Norfolk. The larva feeds on the *Arum maculatum* and a Chickweed.

6. *T. fimbria* *Linn. Don.* 6. 208.—*Solani* *Fab.*

This beautiful moth was formerly very rare, but is now become more plentiful. It frequents oaks from the end of June to the middle of August. My friend, Henry Browne, Esq., has found it at Hethersett, Norfolk, and I once took it in Norwich; the late Mr. Blunt used to breed it in Epping-forest, and it has been captured at Carlisle by T. C. Heysham, Esq., also at Darent and Norwood near London, in Yorkshire, Derbyshire, and Devon. The larvæ are found in the spring and autumn; they feed on the Cynoglossum, Primrose, Violet, and Potato, and Godart says they will attack other Caterpillars, and even those of their own species.

The plant is *Primula Veris* (Cowslip).



Drawn by [unclear] April 1 1850

XYLINA EXOLETA.

The large Sword-grass Moth.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Leach.**Type of the Genus Noctua exoleta Linn.*XYLINA Hüb., *Treit., Goda.*—*Noctua Linn., Fab., Haw., &c.*

Antennæ inserted on the crown of the head close to the eyes, setaceous, robust in the males, thickly clothed with obtuse scales above, each joint ciliated with hairs beneath (1).

Maxilla as long as the antennæ, robust, spiral, setaceous and pubescent at the base, a considerable portion towards the apex furnished with numerous long tentacula (3).

Labial palpi short, robust, porrected obliquely, densely covered with trigonate and toothed scales, which conceal the apical joint (4); triarticulate, basal joint robust, 2nd long, slightly dilated in the middle, 3rd oval-truncate (4a).

Head *very short and closely united to the thorax, densely covered with long scales. Eyes small. Ocelli 2. Thorax quadrate, slightly crested and trilobed behind. Abdomen short, and depressed, the apex triangular in the males. Wings very long and sublinear: superior with the cilia indented; inferior rather large. Anterior legs short, posterior long. Coxæ and thighs very large and woolly. Tibiæ, anterior very short, with an internal scaly spine; posterior very long, terminated by spurs and a pair above the apex. Tarsi producing series of spiny bristles beneath, 5-jointed, anterior very short, basal joint the longest. Claws distinct and slightly notched near the middle. Pulvilli minute (8, a fore leg).*

Larvæ cylindrical, naked, with 6 pectoral, 8 abdominal and 2 anal feet.

EXOLETA *Linn. Faun. Suec. n. 1185.—Haw. Lep. Brit. p. 168. n. 24.*

Pale ochreous with a reddish tint. Palpi nose and eyes black; underside of antennæ brown. Thorax blackish, the anterior part banded with ochre and brown, the lobes rather pinky, the apex of the scales dotted with black. Abdomen ferruginous ochre, obscurely banded with dark brown, black beneath excepting the apex. Wings, superior marbled, pencilled towards the base, the costa brownish, the interior margin more gray, the cilia brown, spotted with black; before the middle is a distinct ear-shaped spot and beyond it a larger one black at the top and bottom, the black extending towards the posterior margin, which produces a short black ray, and an obscure one beneath: inferior wings grayish fuscous, with a darker lunula towards the base, the margin dotted, the cilia ochreous. Underside; with a round black spot towards the centre of each wing.

In the Author's and other Cabinets.

SOME, and perhaps all of the species belonging to this genus, roll their wings round them when they fall down, so as to resemble a piece of dead stick; and in this respect they approach the genus *Cucullia*, an opinion which M. Treitschke entertains no doubt, from his having placed them next to each other in his valuable work.

The following are British species: those with a * have never been recorded by any English author.

*1. *X. vetusta* Hüb.—*exoleta* Don. 6. 187.—Mr. Stone beat a fine specimen of this moth, the beginning of September, out of a hedge in Darent Lane; and I purchased another in the cabinet of the late Mr. E. Blunt. Mr. Donovan has represented this moth, and with it unfortunately the caterpillar of the next.

2. *X. exoleta* Linn., *Curtis Brit. Ent. pl.* 256.—The beautiful caterpillar of this moth is found in July in gardens and marshes, feeding upon the *Iris*, *Serratula tinctoria* (pl. 183), and various other plants. The moth appears in May and June, and also from the middle of October to the beginning of November.

3. *X. rhizolitha* Fab., Hüb., *Goda.*—*Lambda* Haw.

4. *semibrunnea* Haw.—*petrificata* Fab. ? *Goda.*—*petrificosa* Hüb. ?—*umbrosa* Esp. ?

5. *conspicillaris* Linn.—*leuconota* Don. 13. 453. 2.—*melaleuca* *Goda. var.* ?

6. *putris* Linn., *Treit., Goda., Haw.*—*lignosa* Hüb.

7. *Scolopacina* Hüb., *Goda.*—*abbreviata* Haw.

*8. *borealis* Nob.—*putris* Hüb. 50. 241?—The only specimen I have seen of this moth was taken at Kinnordy by my friend Charles Lyell, Esq. who very kindly added it to my collection.

9. *X. rurea* Fab., *Treit., Goda.*—*hepatica* Haw.

10. *combusta* Hüb., *Haw., Goda.*

11. *characteria* Hüb.—*epomidion* Haw.

*12. *musicalis* Esp., *Goda. pl.* 113. f. 1.—*lithoxylea* Hüb.
—Taken by Mr. Browne near Brighton.

13. *lithoxylea* Fab. ? *Haw., Godart pl.* 111. f. 5.

14. *polyodon* Linn., *Haw.*—*occulta* Esp.—*radicea* Fab.
Hüb.

15. *Pinastri* Linn., *Don. 10. 347. 2., Esp.*—*tripterygia*
Esp.

The plant figured is *Bromus* (*Brachypodium*) *syboaticus* (Slender Wood Brome-grass).



LITHOMIA SOLIDAGINIS.

The Agrotis likeness.

ORDER Lepidoptera.

FAM. Noctuidæ.

Type of the Genus, Noctua Solidaginis Hüb.

LITHOMIA Hüb.—Noctua Hüb., Goda.—Xylina Och.

Antennæ rather long and setaceous, formed of numerous joints, clothed with scales above, pubescent beneath, with distinct brushes of hair on each side in the males (1 ♂), furnished only with a few bristles in the females (♀).

Maxillæ as long as the antennæ, spiral, forming 2 broad filaments, with short tentacula at the apex (3).

Labial palpi short, obtuse, porrected obliquely, densely scaly (4), triarticulate, basal joint stout and cleaver-shaped, 2nd not twice as long, fusiform, 3rd not very short, rigid, slender and lanceolate (4a).

Head short, obtuse: eyes moderate, subovate. Thorax subquadrate, densely clothed with scales, not crested, but tufted behind. Abdomen linear obtuse and tufted at the apex in the males, the back angular, more conical in the female. Wings very closely deflexed in repose, superior long and narrow, the posterior margin a little concave towards the apex: inferior trigonate-ovate, not large, the margin indented at the centre: cilia short. Legs rather long and stout: thighs very hairy beneath: tibiæ, anterior short, with a spine beneath, the others with long scales outside down to the middle, and strong spurs at the apex, the hinder with a pair of spurs also below the middle: tarsi long and 5-jointed, bristly beneath: claws and pulvilli minute.

Larvæ smooth and cylindrical, with 6 pectoral, 8 abdominal and 2 anal feet, the dorsal line a little angulated at its termination.

SOLIDAGINIS Hüb. *Noct. pl.* 55. f. 256.—Curt., *Gen.* 844^b.

Light bright grey variegated with fuscous; a black dot on each side of the face close to the eyes, the anterior and lateral scaly lobes of the thorax margined with black: superior wings with the centre fuscous, margined by 2 transverse dentated and sinuated black lines, with 2 grey spots placed obliquely and an auriculate one on the disc, all margined with black, beyond them is a grey indented line forming 2 or 3 long acute angles at the centre, each producing a black ray inwards; several fine black lines at the base; cilia fuscous with pale spots: abdomen and inferior wings pale yellow freckled with pale fuscous; the latter with a faint fuscous line across the middle, curved at the end and forming a circle on the disc, with a broad fimbria not touching the margin; cilia almost white, with a line of fuscous curves at the base.

In the Author's and other Cabinets.

It would be difficult to assign Hübner's reasons for calling this moth "*Solidaginis*," unless it be partial to the flowers of

the *Solidago*, for he states that the food of the Caterpillar is the *Vaccinium Vitis Idæa* (pl. 662.), but it may probably feed on other plants; however this may be, it is undoubtedly confined to northern and mountainous countries, and the discovery of it in England has added a very distinct species to this fine and extensive Order. Mr. F. Walker in his visit to Norway last year, captured several specimens in the middle of September; they had settled on a wall at Happar, near Torneo. This induced me to search the Linnæan cabinet, where I detected an unnamed specimen, apparently confounded with *N. Polyodon*.

For the male figured I am indebted to Mr. S. Carter, of Manchester, who informs me that "two specimens were taken for the first time nine or ten years since at a place called the Brushes, about two miles beyond Stayley Bridge; they were found on a rugged stone wall on the south side of a brook that runs between two mountains: since that period only four specimens had been taken until this year (1837), when they made their appearance from the 20th of August to the 16th of September; they were principally taken about six o'clock in the morning, and none later than ten o'clock."

The angulated abdomen and the attitude of the wings in repose, induce me to adopt Hübner's generic name, and to separate this moth from *Xylina* (fol. 256.), to which it is otherwise nearly related, and I have the less hesitation in doing so as it has never been described in any English work. I have added a figure of the larva from Hübner, and I take this opportunity of correcting an erroneous opinion that the moth before us is a *Cucullia*, with which name it was forwarded to me, and as such it is also recorded in the Entomological Magazine.

For specimens of the beautiful Purple Saxifrage, *Saxifraga oppositifolia*, I am indebted to the Rev. T. Howson, who forwarded them last May from the Upper Limestone of Penigent, in Yorkshire.



Chamaecrista nictitans (L.) Greene

Plate III No. 17 p. 5

APAMEA HAWORTHII.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. *Apamea*

Type of the Genus Noctua chrysographa Hüb.

APAMEA Och.—Noctua Linn., Fab., Esp., Hüb., Haw., Don., Goda.

Antennæ inserted on the crown of the head, close to the eyes; composed of numerous subquadrate joints, pilose, covered with scales above, pubescent beneath (1).

Maxillæ spiral, slender, as long as the antennæ and furnished at the apex with tentacula (3).

Labial palpi porrected obliquely, slender at the base and clavate, the 3rd joint distinct, clothed with broad short scales (4); tri-articulate, basal joint slightly curved, 2nd twice as long, 3rd shorter than the 1st, slender, compressed and rounded at the apex (4 a).

Head densely covered with scales above. Eyes globose. Ocelli two (7).

Thorax subquadrate, not crested. Abdomen not very stout, tufted down the back and on the sides; obtuse in the males; attenuated in the females. Wings forming a triangle when at rest and deflexed; superior various in length and form, frequently obtuse, sometimes with the apex slightly acuminated. Tibiæ, anterior very short with a broad flat spine on the internal side. Tarsi long, 5-jointed. Claws bifid. Pulvilli minute (8, a fore leg).

Caterpillars unknown.

Obs. The dissections were made from N. oculea Linn.

HAWORTHII Nob.

Yellowish brown, variegated with rosy scales. Superior wings with a few scattered white scales, the costa with 3 yellowish spots, and 3 minute ones nearer the apex; an obscure black line at the base, and a lanceolate one at the interior margin; 2 waved narrow whitish transverse lines, one before, the other beyond the middle, the nervure in the centre cream-colour and furcate, above is a small ocellated spot, and below a black hook; beyond it a cream coloured ear-shaped spot with a dark line on the inside; near to the posterior margin runs a yellowish dentated striga, with 3 blackish short rays on the inside; cilia ochreous with a fuscous line down the middle, and a black chain at the base. Body and inferior wings yellowish fuscous, the former rosy ochre at the apex, the latter with a fuscous undefined fimbria, and a lunular line towards the middle; the cilia ochreous with a fuscous line. Underside pale ochreous and fuscous, the inferior wings with a distinct blackish spot near the middle.

In the Author's and other Cabinets.

Handwritten note: * ...

TREITSCHKE has formed the genus *Apamea* into four divisions; but as two of them do not appear to associate so well with our insects as with those of another group, I have excluded them. It is probable that several of the following species are mere varieties; but as I am not certain that they are so, I have kept them separate.

1. *A. secalina* *Hüb., Haw.*—e. June, marshy places.
2. *lugens* *Haw.*—*nictitans* *Hüb. pl. 20. f. 97.*—b. July, b. Aug. Suffolk, weedy banks.
3. *oculea* *Linn., Haw.*—e. July, b. Aug., gardens and banks.
4. *I-niger* *Haw.*—e. Jul. b. Aug., weedy banks.
5. *furca* *Haw.* ditto ditto.
6. *Ophiogramma* *Hüb.*—*biloba* *Haw.*—m. July, hedges.
7. *literosa* *Haw.*—e. July, gardens, Norfolk, and near London.
8. *Æthiops* *Haw.*—e. June, hedges, and Kensington Gardens.
9. *latruncula* *Hüb., Haw.*—*ærata?* *Esp.*—July, hedges.
10. *strigilis* *Linn., Haw.*—e. June, b. July, hedges, Suffolk.
11. *præduncula* *Hüb., Haw.*—July, woods.
12. *terminalis* *Haw.*—*furuncula?* *Hüb.*—July, hedges.
13. *humeralis* *Haw.*—July, Aug., Battersea-fields, Dover, and Suffolk.
14. *minima* *Haw.*—m. Aug., open parts in woods.
15. *rufuncula* *Haw.*—Sept., hedges.
16. *fasciuncula* *Haw.* do. ditto.
17. *tripuncta* *Nob.*—b. Sept., Horning, Norfolk, Mr. Sparshall.
18. *Haworthii* *Curtis Brit. Ent. pl. 260.*—Taken the end of July, at Whittlesea Mere, and at Windermere, by Mr. Dale.

I have the pleasure of naming this elegant moth after A. H. Haworth, Esq. whose “*Lepidoptera Britannica*” and splendid Cabinet, so liberally opened to his friends, entitle him to the thanks of every one engaged in the study of this beautiful Order.

19. *lunina* *Haw.*—*fibrosa* *Goda.*—Whittlesea Mere.
20. *auricula* *Don. 12. 397. 3.*—*chrysographa* *Hüb.*—Aug. and Sept., skirts of woods, marshes and gardens.
21. *erythrostigma* *Haw.*—*didyma* *Goda.*—September? near London, and at Margate.

I was once botanizing in September, by the side of a clear running brook, when a specimen of *A. chrysographa* fell from a plant into the water, and floating down, a dace rose, and instantly drew it under.

The plant is *Orchis pyramidalis* (Late-flowering Orchis).



Silene alyrata.

HADENA CUCUBALI.

The Champion Moth.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. *Hadenæ*

Type of the Genus, *Noctua Capsincola* Esp.

HADENA Schr., Treit., Sam., Step.—*Noctua* Fab., Haw., &c.

Antennæ rather longer in the males than females, setaceous and slender, composed of numerous joints clothed with scales above, ciliated beneath, each joint producing two bristles (1).

Maxillæ spiral, twice as long as the antennæ, furnished at the apex with tentacula (3).

Labial Palpi porrected obliquely, thickly clothed with scales which are longest at the centre beneath, leaving the tip only of the terminal joint visible (4) : triarticulate, basal joint curved, 2nd nearly twice as long, more robust and attenuated to the apex, 3rd small elongate ovate (4 a).

Head thickly clothed with scales. Eyes oval. Ocelli two (7*). Thorax subquadrate, crested before and trilobed behind. Abdomen with tufts of hair down the back, obtuse in the males, attenuated and sometimes acute in the females. Wings deflexed when at rest, anterior rather obtuse. Tibiæ, anterior thickly clothed with scales nearly concealing the internal spine; middle pair with a tuft of scales on the outside in the males; posterior with 2 pair of unequal spurs slightly ciliated on the outside (8 †). Tarsi 5-jointed, basal joint the longest. Claws bifid.

Larvæ smooth cylindric with 6 pectoral, 8 abdominal and 2 anal feet.

CUCUBALI Wien. V.—Esper.—Haw. Lep. Brit. 196. 102.—*rivularis* Fab.

Head and thorax brown freckled with whitish and black scales. Abdomen subcinereous tinged with pink towards the middle, the tufts on the back rosy. Anterior wings bright brown and rose colour, variegated with dark brown; near the base are 2 broken yellow strigæ and a 3rd formed of 2 black indented lines; the costa is irregularly spotted with brown rosy and yellow, next to it at the centre are 2 oblong stigmata surrounded by yellow margins, the 1st being the smallest, they meet below and leave a triangular space between them, and under the 1st is a larger subovate blackish macula; beyond them is a doubly curved rosy line, ornamented with 2 chains of black dots, one of them being lunulate; between these and the margin is a very irregularly angulated yellow striga forming a W at the middle; the posterior margin has a chain of black and yellow crescents; the cilia long notched and maculated. Posterior wings deep ochreous saturated with fuscous deepest towards the margin, the nervures of the same colour, a pale obscure curved line across the middle; the cilia ochraceous with a dark undulated line in the middle.

In the Author's and other Cabinets.

HADENA is a genus established by Schrank; but whether the *N. Cucubali* be his type I have not been able to ascertain: as however it is the only species referred to him by Treitschke, who included it in his 1st division, it is more than probable; the 2nd division having males with pectinated antennæ, is, according to my views, inadmissible; and his 4th, as far as I am acquainted with the species, may be at once distinguished by a dark longitudinal line at the base of the upper wings: these being much more nearly related to Mamestra, I shall add them to that genus.

The following are British Hadenæ:

1. *H. Saponariæ* *Esp.*—*Goda.*—*typica* *Hüb. tab. 12. f. 58.*
marginosa *Haw. 195. 101.*

Middle of July, Letheringset and Hetherset, Norfolk; Bot-tisham, Cambridgeshire; Dover, Brighton, and Darent-wood.

2. *H. Cucubali* *Wien. V.*—*Curtis Brit. Ent. pl. 308.*

This rare insect (which has never been figured in any other British work) is remarkable for the different periods of its appearance. Mr. J. Standish has taken it near Wandsworth 24th of May, and near Dartford 17th of June, in which month Mr. H. Walker takes it in marshy places near the Clyde, Mr. C. J. Thompson in gardens at Fulham, end of July; and I captured a female at Dover, the middle of August.

3. *H. capsincola* *Hüb. pl. 12. f. 57.*—*Haw. 196. 103.*

Beginning of June, weedy banks and gardens.

4. *H. plebeia* *Linn. ?*—*Haw. 198. 107.*—*dentina* *Fab.*—*Haw.*—*Hüb. 87. 408.*—*nana* *Esp.*—*leucostigma* *Haw.*

End of June, shady pales, not uncommon.

5. *H. glauca* *Hüb. pl. 87. 410.*—*Goda. v. 6. pl. 92. f. 7.*—*Haw. 197. 106.*

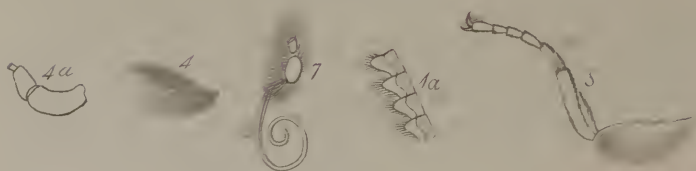
Taken near Matlock in Derbyshire; near Cheltenham, and London. The caterpillar feeds upon *Tussilago farfara* and *Cypripedium Calceolus*; the moth appears in May in France, and only inhabits lofty mountains.

6. *H. Lappo?* *Godart v. 7. pl. 116. f. 3.*—I am indebted to Mr. Lyell for a fine male, taken at Kinnordy, which agrees pretty well with the above figure, and I suspect it may be the male of *H. glauca*.

7. *H. Lithorhiza* *Bork., Treit., Goda.*—*areola* *Esp.*—*ope-rosa* *Hüb. pl. 85. f. 398.*—*Haw. 185. 69.*

End of April, pales and trunks of trees. The caterpillar is said to feed upon the Honey-suckle.

I have copied the caterpillar of *N. Cucubali* from Hübner; it feeds upon the seeds in the capsules of *Cucubalus baccifer*, and no doubt upon those of *Lychnis* (pl. 54.) and *Silene*, for the former is not a British plant. The *Silene inflata* (Bladder Catchfly) is represented in the plate, the plant most likely to which it is attached in Britain.



Trichostema - Pinus - May 1860

Borealis 11 58 1/2

117. *Trachea piniperda*

ACHATEA SPRETA.

The Pine-destroying Noctua.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach.

Type of the Genus Bombyx spreta Fab.

ACHATEA Hub.—Bombyx Fab., Panz.—Phalæna Noctua Kob., Panz.

Antennæ inserted at the back of the head, serrated (1a) and somewhat thickest in the middle in the males, slender in the females, composed of numerous joints, covered with scales above, hairy beneath, the basal joint large and hairy.

Maxillæ long, furnished with tentacula towards the apex (3).

Labial palpi small, very hairy, porrected horizontally (4), 3-jointed, 1st joint curved upward, long robust, 2nd short robust, attenuated, 3rd minute, cylindric truncate (4 a, the scales being removed).

Head small, nearly concealed. Eyes small (7). Thorax large hairy.

Abdomen robust short, very soft and hairy beneath. Wings deflexed when at rest; superior obtuse, inferior rather small. Legs anterior short. Tibiæ anterior short with a small spine on the internal side, 4 posterior terminated by spurs. Tarsi 5-jointed. Claws large (8, a fore leg).

Larvæ naked with 6 pectoral, 8 abdominal, and 2 anal feet.

SPRETA Fab. Ent. Syst. t. 3. pars 1. p. 455. n. 151. Panz. Faun. Ins.

Germ. fasc. 82. n. 24. Piniperda Kob's Monog. p. 51. tab. 1. fig. 1—12.—ochroleuca Hub.

Head rosy ochre, thorax of the same colour, the anterior and lateral portions margined with white, a spot in the middle and one on each side white also: antennæ brown. Superior wings ochre variegated with rosy red, sometimes inclining to castaneous, a pale transverse line near the base and another waved and crenated near the posterior margin white and castaneous: between the costa and middle a subquadrate yellowish spot and an oblique subreniform larger spot of the same colour (ochraceous in the middle) connected with the former by a pale line; nervures whitish; cilia pale, the edge dark interrupted: Abdomen and inferior wings fuscous, the former reddish towards the apex; cilia of the latter pale, rosy at the base.

In the Author's and other Cabinets.

ALTHOUGH the Oak and many other trees maintain multitudes of insects, none appear to support more destructive inhabitants than the Pines. On a former occasion we called the attention of our readers to a beetle that destroyed the young Firs, by perforating their shoots; and we now present them with a Moth that in its larva state totally consumes the foliage, sometimes laying waste the pine-forests of Germany.

The larvæ of our insect, like those of *Sphinx Pinastris*, *Bupalus Piniarius*, &c. are striped in a way to resemble the leaves upon which they feed; they are full grown about the end of June, when they descend into the earth and become chrysalides, and the following March the fly appears, at which time no doubt multitudes are destroyed by the inclemency of the season, thereby preventing the serious consequences that occur when such a check is withheld by the Great Author of Nature; who has protected them with a clothing that has a greater resemblance to hair than scales, and no doubt is better adapted to their wants, since we find the same in *Eriogaster Populi*, *Tethea luteicornis* Haw., *Biston hirtarius*, *hispidarius*, *pedarius*, and many other moths that make their appearance at an early period of the year.

A. spreta was described by Fabricius in his *Mantissa Insectorum* under that name, many years before Kob published an account of it calling it *Noctua Piniperda*. Panzer when he figured it in his *Faunæ Insectorum Germanicæ* restored the original name; and we are bound to do the same, although Kob's is certainly more applicable. It was unknown in our British cabinets until 1811, when Mr. Stephens captured a specimen near Hertford, since which time it has been found in the larva state at Birch Wood in Kent, and near Ripley in Surrey, where that gentleman informs me it was abundant last year; at the former place the moth has been found by collectors in the flowers of the white thorn as well as in Norfolk.

For the drawing of the Caterpillar, (which is represented upon a sprig of *Pinus sylvestris*,) we are indebted to Mr. Raddon.



BOBBS



by J. Curtis Aug 1 1857

Boree W. N. No 17 6

MISELIA BIMACULOSA.

The twin-spotted Underwing.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach.

Type of the Genus Noctua compta Fab.

MISELIA Hüb., Och.—Noctua Linn., Fab., Haw.

Antennæ inserted close to the eyes, on the crown of the head, long, setaceous, robust in the males, sometimes produced on the inside (fig. 1); covered with scales above, pubescent beneath, basal joint cup-shaped, the scales extending far beyond the edge. *Maxillæ* spiral, setaceous, not longer than the antennæ, furnished with tentacula at the apex (3).

Labial palpi short, porrected somewhat obliquely, thickly clothed with scales excepting the terminal joint which is almost naked (4); 3-jointed, basal joint rather robust, 2nd long and not so thick, 3rd elongate obovate (4 a).

Head tufted on the crown. Eyes rather small and oval (7*). Thorax quadrate, thickly clothed with scales. Abdomen large, robust, angulated, tufted on the back near the base, ovate conic in the females.

Wings slightly deflexed when at rest; superior large, the posterior margin and cilia crenate; inferior rather small. Legs strong, anterior the shortest. Thighs thickly ciliated. Tibiæ, anterior thickly clothed with scales, concealing the internal spine, middle and posterior spurred, the latter having a pair above the apex, one being very short.

Tarsi 5-jointed, basal joint the longest, as long as the tibia in the anterior pair. Claws distinct, bifid. Pulvilli small (8, a fore leg).

Larvæ with 6 pectoral, 8 abdominal, and 2 anal feet, head and pectoral segments depressed, penultimate gibbous or tuberculated.

Obs. The dissections and descriptions were made from *N. Oxyacanthæ* Linn.

BIMACULOSA Linn. Syst. Nat. 2. 856. 184.—Fab. Ent. Syst. 3. pars 2. 70. 197.

Yellowish cinereous, partially inclining to castaneous and minutely speckled. Antennæ and abdomen ochraceous. Eyes cinereous: thorax with the internal edges of the lateral scales black: superior wings with a brown spot at the base and 10 marks of the same colour branching from the costa; nervures dotted brown; a dentated brown striga towards the base; and a crenated brown and pale one, parallel to the posterior margin, next which is a castaneous indented line, suffused near the posterior angle; 3 large pale spots near the centre margined with brown and ferruginous, and a shuttle-shaped spot of the latter colour at the base; the posterior margin crenated and spotted with brown: inferior wings partially speckled, limb pale, the margin dentated and brown, a large lunular spot near the centre, and a quadrate one near the posterior angle extending in a line across the wing, of the same colour. Beneath whitish, nervures and a large spot in the centre of each wing fuscous.

In the Cabinet of the British Museum.

IN the formation of genera there cannot be a more difficult task than to detect sound characters to distinguish groups of Lepidoptera, especially those of the *Noctuadæ*: that the structure of the mouth will divide them naturally there can be no doubt, but we suspect not sufficiently. The next character we should select would be the antennæ: but here the greatest care is necessary; for it cannot be denied that the pectinated or simple antennæ of the males will not separate the *Noctuadæ* into two primary divisions: but although this may be true, we never can admit that a species with strongly pectinated antennæ can naturally come in the midst of a genus where those organs are characterized by having each joint, at most, but slightly lobed. This however has been done in the *Schmetterlinge von Europa*, by the introduction of *Bombyx oleagina* Fab. into the genus *Miselia*, which for the above reasons we shall exclude, and only enumerate the following as British species.

1. *M. compta* Fab., *Hüb.*, *Haw.*—*X-scriptum* Sowerby's *Br. Mis. tab.* 55.—*compta* Och.

The larvæ feed I believe upon *Lychnis dioica* (pl. 54). The perfect insect is found upon paling the end of June at Darent Wood, near Dartford.

2. *M. concinna* *Hüb.*—*conserta* *Hüb.*—*albimacula* Och.—*compta* *Esp.*

Not before recorded as British.

3. *M. Oxyacanthæ* *Linn.*, *Haw.*, *Don. Brit. Ins.* 5. 165.

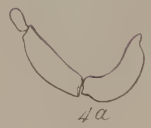
The larvæ feed upon white-thorn in June, and the imago flies in the evening about hedges and woods, from the end of September to the end of the following month.

4. *M. bimaculosa* *Linn.*, *Nob.*

The only indigenous specimen of this fine moth is preserved in the British Museum. For the figure of the caterpillar, which feeds upon the elm, we are indebted to Hübner.

5. *M. aprilina* *Linn.*, *Haw.*—*runica* *Fab.*, *Don.* 10. 354. 1.—*Sepp.* 2. 20.

“This (says Mr. Haworth) is at once a plentiful, well known and beautiful insect; but it is remarkable that none of our collectors ever take it in the winged state, and very rarely in that of a Larva. The usual mode of procuring it being by digging about the roots of oaks an inch deep for the pupæ, which are annually found in that manner in considerable numbers.” The middle of April and of October the moths are hatched.



TRACHEA ATRIPLICIS.

Wild Arrach Moth.

ORDER Lepidoptera. FAM. Noctuidæ. *Trachea atriplicis**Type of the Genus, Noctua atriplicis Linn.*

TRACHEA Och., Curt.—Noctua, Linn., &c.

Antennæ inserted on the crown of the head, close to the eyes alike in both sexes, slender, setaceous, and composed of numerous joints, pubescent beneath, clothed with scales above, the basal joint covered with long scales forming a cup (1).

Maxillæ spiral, as long as the antennæ (3).

Labial Palpi short, scarcely projecting beyond the head, densely clothed with rather short scales, the apical joint distinct (4); triarticulate, 1st and 2nd joints robust, of equal length, the former curved, the latter slightly attenuated at both ends, 3rd joint small, subovate (4a).

Head short, densely covered with scales. Eyes rather small and oval.

Thorax large with a bifid crest in the middle. Abdomen short and stout, the basal joints tufted down the back: the apex tufted in the males. Wings deflexed when at rest, superior subovate-trigonate, the posterior margin rounded and indented; inferior wings rather small and subovate, the margin slightly indented. Legs robust, densely clothed with hairy scales: tibiæ, anterior very short with an internal spine arising near the base, the others furnished with unequal spurs, the posterior having two pair. Tarsi longer than the tibiæ, basal joint the longest. Claws bifid (8, a fore leg).

Larvæ smooth, subcylindric, the penultimate joint angulated above; 6 pectoral, 8 abdominal and 2 anal feet.

ATRIPLICIS Linn. Faun. Suec. 317. 1196.—Curt. Guide, Gen. 853. 1.

Clouded brown with a bloom over it; crown of head and margins of the thoracic lobes yellow-green; superior wings with several blackish spots on the costa and 4 minute buff ones towards the tip, a double crenated blackish striga at the base, another before and an oblique one beyond the middle, and a single buff striga very much sinuated and angulated towards the posterior margin which bears a line of lunulate black marks; a yellow-green cloud at the base, the extremity variegated with the same colour as well as an ocellated spot and an ear-shaped one on the disc, the internal edge of which as well as an oblique oblong one beneath it are buff; cilia spotted with buff; inferior wings buff, tinged with fuscous, becoming dark beyond the disc where there is an obscure striga and a spot above it, appearing from the underside: legs beneath buff, tibiæ spurs and the joints of the tarsi tipped with the same colour.

In the Author's and other Cabinets.

THE type of our genus is allied to *Miselia* (pl. 177) and *Polia* (pl. 248); but I am unable to determine whether the other

two species I have included in *Trachea*, would not as well associate with the former; for these groups of *Lepidoptera* are so destitute of characters, that they are generally arbitrary.

1. *T. Atriplicis* Linn.—*Curt. Brit. Ent. pl.* 431.

This is a rare moth in Britain; but many years since it used to be taken near London; it has subsequently been observed by Dr. Leach near Cheltenham, and by Dr. Skrimshire at Wisbeach in Cambridgeshire. The time of its appearance is stated to be June and September in gardens, hedges, and on walls.

The caterpillars are supposed to vary considerably, for Roësel has represented one in his first volume, pl. 31, of a rosy or flesh colour, whilst Hübner's, from which our figure is copied, is green and black above: they feed on the *Atriplex hortensis*, *Rumex acetosa* (pl. 396.), *Polygonum Persicaria*, (pl. 284.), and *P. Hydropiper*.

2. *T. protea* Hüb.—*Och.—Goda* 6. pl. 89. f. 2, 3.—*nebulosa* Bork.—*Seladonia* Harw. not of Fab.

Fuscous, head, thorax, and superior wings green, variegated with black and a ruddy tint, lobes of the thorax with paler marks, the edges black; superior wings with black spots on the costa, and several very irregular strigæ, and a black forked line at the base, a large pale oblong spot on the disc, with the outline of an oval upon it, and an ear-shaped one beyond it, with an irregular pale stripe parallel to the posterior margin, which has a serrated black line: inferior wings with a pale line along the margin.

This pretty and variable species is found the middle of April, beginning of September, and in October, in most of the woods round London; also at Glanville's Wootton, and in the New Forest by Mr. Dale; Gibside, Newcastle, Capt. Blomer, &c. The caterpillar feeds on the Oak.

3. *T. Chi* Linn.—*Don. v.* 12. pl. 406.

Hoary-gray, superior wings with numerous fuscous spots on the costa, and waved and crenated strigæ edged with black and ochre, with a circular and an ear-shaped spot on the disc, and a black \times below them; under wings white or fuscous, with darker irregular spots and lines.

Found from the middle of August to the middle of September, on old walls and rocks covered with Lichen, near Edinburgh and Ambleside, by Mr. Dale and myself; in Yorkshire and Derbyshire; at Stonehenge by the Rev. G. T. Rudd. I found it at Linton in Devon; also on Dartmoor; and in Anglesea by Mr. Donovan. A beautiful variety is taken by Mr. Wailes near Newcastle, in which the ground of the superior wings is ochreous-gray, bearing white spots; the under wings and the body are blackish fuscous. The caterpillar feeds on the Columbine, (pl. 392.), *Sonchus oleraceus*, and *S. arvensis*, *Lactuca sativa*, *Arctium Lappa*, and *Salvia pratensis*.

The Plant is *Polygonum Hydropiper* (Water Pepper).



ACRONYCTA SALICIS.

The Sallow Noctua.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Leach.*

Type of the Genus Noctua Leporina Linn.

ACRONYCTA Och.—Apatalæ Hüb.—Noctua Linn., Fab., Lat., Haw.

Antennæ inserted on the crown of the head, close to the eyes, alike in both sexes, long, setaceous, composed of numerous joints covered with scales above, basal joint tufted with scales, forming a cup for the insertion of the 2nd (fig. 1 a).

Maxillæ as long as the antennæ, with tentacula towards the apex (3).

Labial palpi porrected obliquely, completely clothed with rather short scales, the terminal joint being very distinct (4); 3-jointed, basal joint robust, 2nd long linear, 3rd short ovate (4 a).

Head *subtrigonate*. Thorax *subquadrate*, clothed with rather long and large scales. Abdomen *large robust, angulated, obtuse, and having a margin of scales in the males; cylindric conic in the females*. Wings *deflexed when at rest; superior rather elongate lanceolate; inferior rather small*. Legs; *anterior the shortest*. Tibiæ; *anterior, much shorter than the tarsus, with a twisted, subulated spine on the internal side, the others spurred at the apex, the posterior having a pair above on the side*. Tarsi *5-jointed, basal joint the longest*. Claws *simple*. Pulvilli *distinct (8, a fore leg)*. Larvæ *various, with 6 pectoral, 8 abdominal and 2 anal feet*.

Obs. *The dissections are made from Noctua megacephala Fab.*

SALICIS Nobis.

Pale cinereous, clouded with brownish cinereous. Superior wings with a pale indented, abbreviated spot, near the base and another in the middle, a small black ring towards the middle and a large reniform one dark in the centre, beyond the middle; costa spotted with black, posterior margin with a row of black spots parallel to which runs a sinuated, indented whitish line, and nearer the middle, 2 indented sinuated black lines, the space between them forming 2 white lunular spots at the interior margin; a spot near the base and another subquadrate one nearer the middle approaching the interior margin black. Abdomen and inferior wings dull ochraceous, the former with an obscure black line near the base, the latter with a nearly obsolete spot towards the middle and a fuscous fimbria.

In the Author's and other Cabinets.

THE species represented in the plate (rather larger than life) varies considerably: some specimens are much darker and brighter than others, and the underwings of one of our males are fuscous not ochraceous. This insect, which so much resembles *A. Rumicis* that it is difficult to detect any difference in them, has for many years stood in our cabinets as the *A. Euphorbiæ* of Fab. and Hüb.; but upon referring to the figure of the latter and Ochsenheimer's description, it is clearly not the same species. It would not now have been recorded as distinct, had not Mr. Dale and myself found a considerable number of caterpillars the 10th August last year in the Trossacks, none of which varied from the drawing; and being very distinct from that of *A. Rumicis* in form and markings, we feel no hesitation in giving it as an unnoticed species. The specific name has been assigned to it from its feeding upon a little Sallow that grew, together with *Myrica Gale*, which it would also eat, in a humid spot at the base of Ben Chochan.

It is a curious fact that in the present genus the larvæ are of more value in separating than in uniting the species; showing how cautious we must be in adopting exclusively any system. It is this that has led those who follow the views of the *Wiener Verzeichniss* implicitly, to fall into many errors: there is not perhaps a more natural genus than *Acronycta* of Ochsenheimer if we look at the perfect insects; yet when we refer to the larvæ we shall not find more than 2 that have any affinity beyond the number of their feet.

The following are our British species:

- 1 *A. Leporina* L., *Don. Brit. Ins.* 10. 327. 1.
- 2 *Bradyporina* Och., *Hüb. tab.* 4. f. 16.
- 3 *Psi* L., *Don. Brit. Ins.* 4. 133.
- 4 *tridens* F., *Hüb. tab.* 1. f. 5.
- 5 *Menyanthidis* Hüb. *tab.* 2. f. 6 & 7.
- 6 *auricoma* F., *Hüb. tab.* 2. f. 8.
- 7 *similis* Haw. *Lep. Brit.* 180. 57.
- 8 *Rumicis* L., *Don. Brit. Ins.* 4. 126.
- 9 *Salicis* Nob.
- 10 *aceris* L., *Don. Brit. Ins.* 10. 330.
- 11 *megacephala* F., *Hüb. t.* 2. f. 10. *t.* 3. f. 11.
- 12 *Alni* L., *Don. Br. Ins.* 10. 327. 2.
- 13 *Ligustri* F., *Hüb. tab.* 5, f. 21.

The larvæ, when they change to pupæ, spin themselves a web, either upon or amongst the leaves upon which they fed.

A piece of *Salix* is figured with the insects.



Leucosten montanum
= *Le. papilionum*



POLIA OCCULTA.

The great Brocade.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. *3 4/2-2**Type of the Genus Noctua nebulosa Och.*

POLIA Hüb., Och.—Noctua Linn., Fab., Haw., Don., Goda.

Antennæ inserted close to the eyes, on the crown of the head, setaceous, rather stouter in the males, composed of numerous transverse joints, covered with scales above, pubescent beneath, each joint producing a bristle (1).

Maxillæ spiral, setaceous not longer than the antennæ, furnished with tentacula at the apex (3).

Labial palpi porrected obliquely, thickly clothed with scales, which are longest beneath and very short on the terminal joint (4); triarticulate, basal joint short, slightly curved, 2nd twice as long, slightly attenuated, and acuminate at the superior angle of the apex, 3rd rigid compressed, ovate and acuminate, having a longitudinal groove on the side (4a).

Head thickly clothed with shortish scales. Eyes globose. Ocelli 2 (7*).

Thorax subquadrate, slightly crested and trilobed. Abdomen long, robust, sometimes tufted down the back, obtuse, dilated at the apex in the males, somewhat tapering in the females. Wings deflexed when at rest, anterior long, sublanceolate. Legs strong, anterior the shortest. Thighs thickly ciliated. Tibiæ, anterior thickly clothed with scales, concealing the internal spine, the others spurred, and furnished with a brush of scales on the outside near the middle, the posterior with 2 pair of unequal spurs. Tarsi with the basal joint very long, having series of bristles beneath. Claws bifid. (8†, a hind leg).

Larvæ smooth cylindrical, with 6 pectoral, 8 abdominal and 2 anal feet.

OCCULTA Linn. Faun. Suec. n. 1203.

Grey, clouded and freckled with brown. Superior wings with a black longitudinal line and two transverse undulated pale lines near the base; in the disc are a pale heart shaped spot, an oval one below, and a large ear-shaped mark beyond; then follows another crenated and waved pale striga, and still nearer the posterior margin (which is spotted with triangular black spots) is an angulated and irregular pale striga producing several brown rays on the internal side. Abdomen and inferior wings yellowish-brown with an obscure darker crescent near the centre; the cilia white.

In the Cabinets of the British Museum, Mr. Haworth and the Author.

THE genus Polia appears to be a very artificial one, and is nearly related to Miselia. The following is an account of our native species.

Polia nebulosa (Linn.) Haw.

1. *P. herbida* Hüb., Och., Goda. v. 6. pl. 97. f. 3.—*prasina* Fab.—*Egregia* & *Jaspidea* Esp.—*Tullia* Cram.—*mixta* Haw.?

Two or three specimens were taken at Lanark by Mr. H. Walker the end of last June, flying about quickset hedges. My own were bred by the late Mr. Blunt; and Mr. J. Standish has beaten it out of Oaks in Darent Wood the beginning of June. In France it appears in August; and Mr. Haworth's *P. mixta* taken in April had possibly lived through the winter. The caterpillar feeds upon *Cochlearia armoracia*.

2. *P. occulta* Linn., Hüb., Haw., Och., Goda.

This rare and fine species was first recorded as British, I believe, by Mr. Haworth, an imperfect specimen having been presented to him by Mr. Hatchett of Kingsland; others have been taken in July in Epping Forest. The female that I possess was found near Dover Castle in August. The caterpillar feeds upon the Lettuce and Dandelion, and is full grown in May. I am again indebted to Hübner for the figure of this fine larva, and have the pleasure of stating, that I lately purchased a copy of this scarce and very expensive work, that I may be enabled to give in the progress of my own, faithful representations of rare caterpillars, which have never been figured in any other publication.

3. *P. nebulosa* Berl. Mag., Och.—*plebeia* Hüb., Goda.—*bi-maculosa* Esp.—*grandis* Don. v. 10. pl. 345. 1.—Haw.

End of June, trunks of trees. Larva found in April upon *Verbascum Thapsus*.

4. *P. tinctoria* Borck., Och., Goda. 6. pl. 96. 3.—*hepatica* Hüb. *occulta* Fab.—*trimaculosa* Esp.—*argentina* Haw.

A few years since, this insect was found on the trunks of trees in Coombe and Darent Woods, in June and the beginning of July. The caterpillar feeds upon *Ononis spinosa*, &c.

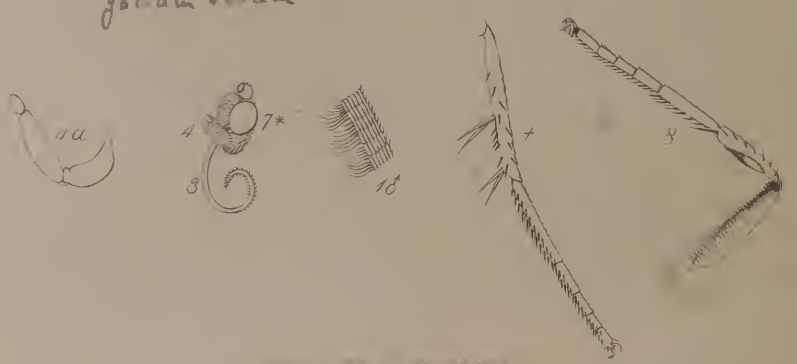
5. *P. nitens* Haw. Lep. Brit. 188. 77. Taken in Norfolk by the late Rev. J. Burrell.
6. *Advena* Fab., Esp., Hüb., Haw., Och., Goda. 6. 96. 4.—June and b. July, gardens. Caterpillar feeds on Lettuce and Dandelion.
7. *flavicincta* Fab., Hüb., Haw., Don. 10. 334.—Och., Goda.—*flavicincta major* & *dysodea* Esp.
End of September, upon pales, &c. in gardens.
8. *P. dysodea* Hüb., Och., Goda.—*flavicincta minor* Esp.—*chrysozona* Borck.—*ornata* Vill.—*Ranunculina* Haw. Wilkes tab. 14.—End of July, gardens.
9. *serena* Esp., Fab., Hüb., Haw., Och., Goda.—*par*, Don. 10. 338. 3.—Middle of June, shady pales.
10. *ochracea* Haw. Lep. Brit.—*Echii* Hüb.?—End of June.

As this insect appears to me to be related to the last, I have introduced it here; and *Noctua Chi* and *N. Templi* are excluded, as I think they belong to other groups.

The plant is *Leontodon Taraxacum* (Common Dandelion).



Galium verum



Handy et. Scudder. Ann. Ent. Soc. Am. 1901.
Yuccella plantaginis.

HAPALIA PRÆCOX.

The Portland Moth.

ORDER Lepidoptera.

FAM. Noctuidæ. *VII**Type of the Genus, Noctua præcox Linn.*

HAPALIA Hüb.—Actebia Step., Curt.—Noctua Linn., Hüb., Haw.

Antennæ inserted on the crown of the head, close to the eyes, setaceous, ciliated transversely beneath in the male (1 ♂).*Maxillæ* shorter than the antennæ, rather stout, spiral and furnished with tentacula at the apex (3).*Labial palpi* short and recurved, but projecting beyond the head, densely clothed with rather short scales, the apical joint visible (4), triarticulate, basal joint curved nearly as long the 2nd, which is long and ventricose, 3rd small and ovate (4 a).Head *small thickly clothed with scales: eyes lateral and globose* (7*).Thorax *but slightly crested. Abdomen a little depressed and tufted down the back in the males, the apex truncated and tufted. Wing slightly deflexed in repose: superior narrow linear and truncated; inferior ample. Thighs, anterior appearing serrated beneath: tibiæ bristly, anterior with an internal spine* (8); *the others spurred at the apex, the posterior with a long pair of spurs also below the middle* (†); *tarsi long and rough beneath with strong bristles; 5-jointed, basal joint very long: claws and pulvilli distinct.*Larvæ *naked, with 6 pectoral, 8 abdominal and 2 anal feet.*PRÆCOX Linn., *Syst. Nat.* 2. 854. 174.—præceps Hüb.—Curt. *Guide, Gen.* 857. 1.

Whitish-grey; antennæ brownish, except at the base; thorax greenish, especially the collar, freckled with white and a little black: anterior wings brownish-green, freckled with paler scales, costa spotted with black and white; 3 waved pale strigæ, the edges denticulated with black, 2 towards the base, the 3rd beyond the middle, on the disc are 3 large pale spots partially edged with black, the 1st roundish with the centre reddish brown, beneath it is an ovate one and remote from them an auriculate one bearing irregular greenish and black markings, sometimes there is a brownish waved line across the centre of the wing, and a broad waved purplish-red stripe, edged with a pale line, parallel to the posterior margin, but not reaching the apex; cilia white, spotted with brown, and a chain of black dots at the base: inferior wings and abdomen ochreous-fuscous, the former with a pale margin, the nervures and a lunate mark on the disc a little darker; cilia whitish.

*In the Author's and other Cabinets.*ROESEL's Phal. 2. t. 51., exhibiting figures of our moth and its Caterpillar, being referred to by Linnæus in illustration of his species (*P. præcox*), I am inclined to retain his name, although from his short description some doubt remains respecting it.

The serrated appearance on the underside of the anterior legs is, I believe, unnoticed by Authors; the tibiæ are also bristly, and the spurs long and slender.

This is a local insect, and used to be reared by the late Duchess of Portland, who first found it in the Isle of Portland, and it has since been met with on the sea-shore of Ireland the end of August; but little of its history was known until that indefatigable and zealous Naturalist Capt. Blomer discovered its locality, and to him I am indebted for the following observations and the figure of the Larva.

“It was by mere accident I observed the Caterpillars feeding on the *Galium verum*, or Yellow Lady’s Bed-straw, in crossing a level spot in a hollow between some sand-hills at Appledore Burrows, where that plant predominated, and where it was almost covered over with sand, except here and there a little appearing above it: in the course of half an hour I collected near 40 larvæ, mostly full grown, in the space of a hundred yards in circumference, when they disappeared and I never could find another either in that or the following season: this occurred the end of May 1825, on a dark showery day. Some years subsequently, at the same period of the year, at Dawlish Warren, I observed a profusion of the *Galium* amongst the sand-hills, which convinced me the Caterpillars were to be found under the sand, and the next day I took my small flower garden-rake, and raking the sand, I soon succeeded in finding them; they lay about an inch under the sand. By the same means I found plenty of the larvæ of *N. vitta* and *valligera*, but only where short grass abounded, on the roots of which they feed; also the larva of *N. Sagittifera* on the leaves of the Henbane, or under the sand, chiefly beneath the leaves. I conclude the larva of *N. præcox* only feeds at night, except on dark stormy days, as was the case on the day I first found them feeding. I reared the larvæ in a box covered three inches deep with the sand in which I found them, and the moths were produced the following August.”

The other species I have included in this group forms the Genus LYCOPHOTIA Hüb., and SCOTOPHILA Steph.

H. PORPHYREA Hüb. Noct. pl. 19. f. 93.—*picta* Fab.—Ericæ Don. 10. pl. 360. f. 1.

End of July, heaths, Yorkshire; Norfolk; Kent; Birchwood, the New Forest, &c.

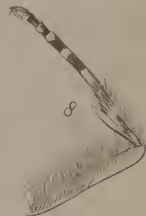
The Caterpillar feeds on the Ericæ, especially *E. cinerea* (pl. 35.); according to Hübner and M. Duponchel it forms a cocoon of earth and dry leaves at the foot of the plant on which it fed.

Galium verum having been figured in pl. 317, and authors stating that the Larva of *A. præcox* feeds also on the *Sonchus oleraceus* (Common Sow-thistle) it is added to our Plate.



marcel Pl. 24
 Chemoton III Pl 173

Fumora officinalis
 (II 92. VIII. 36)



Deru III Pl 34 fig 2

DIPHThERA ORION.

The scarce Marvel du Jour.

ORDER Lepidoptera. FAM. Noctuidæ. *3. Noctuidæ**Type of the Genus, Noctua Orion Esper.*

DIPHThERA Hüb., Och., Curt.—Noctua Oliv., Fab., Hüb., Haw., Goda, &c.

Antennæ inserted on the crown of the head close to the eyes, rather short filiform, alike in both sexes, composed of numerous short joints clothed with scales above and hairs beneath (1); the basal joint large and cup-shaped, entirely clothed with scales, 2nd joint subglobose.

Maxillæ spiral, nearly as long as the antennæ and ciliated at the apex (3).

Labial Palpi curved upward, rather long and slender, triarticulate, basal joint long, producing long scales beneath, 2nd considerably longer, densely clothed with scales, 3rd as long as the 1st very slender and covered with close small scales (4 and 4a).

Head short, clothed with long erect hairy scales. Eyes subglobose.

Thorax broad, thickly clothed with long scales forming somewhat elevated lobes. Abdomen tufted down the back, slightly obtuse and thickened at the apex in the males, conical in the females. Wings; superior elongate-trigonal obtuse, inferior not very ample. Tibiæ clothed with longish scales, anterior with a long lanceolate spine on the inside, intermediate and posterior spurred at the apex, the latter with a pair of spurs below the middle. Tarsi 5-jointed. Claws long (8, a fore leg).

Larvæ somewhat hairy, with 6 pectoral, 8 abdominal and 2 anal feet.

Pupa obtuse and producing a few curved hairs at the apex.

ORION Esper 4. tab. 118. f. 4—7. Sepp, tab. 9. f. 1—8. Curtis's

Guide, Gen. 859. 1.—Aprilina Hüb. tab. 5. f. 22. ♀. Panz. 4. 21.

Don. 10. pl. 347. 1.—runica Gmel.—Haw. 200. 113.

Bright light green: antennæ black, spotted with white at the base, the underside ochreous: eyes and palpi beneath black: thorax with the base of the collar, 4 spots behind it and 4 larger ones towards the abdomen, black: superior wings with the costa, a wedge-shaped dash reaching the disc, and a stripe towards the interior margin white; an irregular black fascia near the base, an L-shaped mark on the disc, with a large spot on the costa and a lozenge-shaped open one below it, as well as several smaller ones black; a very irregular and sinuated black fascia towards the posterior margin, with a line of 7 black and white subrhomboidal dots: inferior wings fuscous, blackish towards the margin, with a dark lunule towards the base; at the anal angle arise 2 short sinuated whitish lines: cilia alternately black and white. Abdomen griseous, with a line of black tufts down the back: legs black spotted with white.

In the Author's and other Cabinets.

FABRICIUS and other writers have occasioned so much confusion by altering and transposing specific names, that it frequently happens in sending to the continent for a species, instead of receiving the one desired, another of no value in this country is transmitted to us: it was owing to such a misunderstanding that the beautiful moth now represented has not appeared earlier in this work, for I wrote to a correspondent in Germany for a specimen to dissect, but instead of *D. Orion* I received specimens of *Miselia aprilina*, of which I had an abundance before. I was therefore happy to adopt Esper's name in my Guide, hoping that it may at once enable all Lepidopterists to identify this rare and handsome moth.

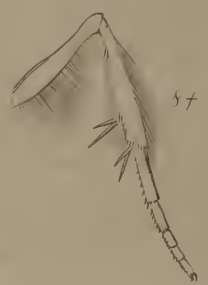
In the markings of the superior wings our genus resembles *Acronycta*, (pl. 136.) and some of the larvæ are similar, but in habit the moth seems to approach *Thyatira*, and the inferior wings have the same peculiar anal strigæ as characterize *Miselia* (pl. 177.). There is however a good character of distinction to be found in the palpi, the basal joint is longer than usual, (Mr. Stephens says it is very minute,) and the 3rd does not form an angle with the 2nd, but is porrected in the same line.

The moths vary so considerably, that Dr. Leach thought there were two species, and the caterpillars of Sepp and Hübner are sufficiently dissimilar to justify such an opinion; but as all the males that I have seen have had much fewer black marks on the upper wings than the females, I am inclined to think the difference merely sexual.

A few years since this moth used to be sold for 30s. a specimen; but the indefatigable researches of entomologists have been attended with so much success, that there are few cabinets of the present day that do not contain this lovely insect, which was first discovered in Britain by the late Duchess of Portland.

We learn from Godart that the caterpillar is found in September upon the Oak, Birch and Beech, and is full fed in October, when it buries itself in the earth to become a pupa, and the moth is hatched the end of the following spring. Mr. Dale informs me that Mr. Cocks of High Bickington in Devon, has found the larvæ from the 3rd of September to the beginning of October; Dr. Abbot also found the caterpillar near Bedford the 26th August. The moth is generally observed on the trunks of trees in May or the beginning of June. Mr. Standish I believe has often met with them in Birch-wood: for my specimen I am indebted to Mr. C. A. Johnson, who received it from Ipswich; others I believe have been taken by Dr. Leach at Woodlands, near Plymouth, and Oakhampton Park, Somersetshire.

The Plant is *Fumaria officinalis** (Common Fumitory).



Rubus saxatilis

Bot. v. 1. p. 100. t. 4

PHLOGOPHORA LUCIPARA.

The small Angle-shades.

ORDER Lepidoptera.

FAM. Noctuidæ.

*Type of the Genus, Noctua lucipara Linn.*PHLOGOPHORA Och., Curt.—Trigonophora Hüb.—Euplexia Step.—
Noctua Linn., Hüb., Haw.*Antennæ* inserted on the crown of the head close to the eyes, short, setaceous and clothed with scales above, very pubescent beneath with series of bristles (1); stoutest in the males.*Maxillæ* much shorter than the antennæ, very spiral, setaceous and tentaculated at the apex (3).*Labial palpi* porrected obliquely, densely clothed with scales, the apical joint visible (4); triarticulate, basal joint subreniform, 2nd considerably longer, slightly attenuated, 3rd slender, elongate-ovate, very horny, especially at the apex (4 a).

Head trigonate, obtuse, the scales long on the crown: eyes naked, ovate and lateral: ocelli minute. Thorax crested behind. Abdomen tufted down the back, the fascicle on the 3rd segment being the largest, the apex dilated with spreading scales in the males and 2 horny conniving lobes. Wings deflexed and folded longitudinally in repose: cilia somewhat denticulated. Tibiæ short and thick, anterior with an internal spine, the others with a long pair of spurs at the apex, the hinder long and thickened with scales externally, furnished with a pair of spurs also above the apex (8 †): tarsi 5-jointed, spiny beneath with short bristles.

Larvæ naked, slightly angulated towards the tail, with 6 pectoral, 8 abdominal and 2 anal feet.

LUCIPARA Linn.—Curt. Guide, Gen. 860. 1.—flavomaculana Fab.

Brown with a purple bloom; thoracic crest reddish at the apex, with a black spot on each side; abdomen brown, the sides pale at the base: superior wings variegated with pale red, brown and ochre, with a purple bloom on the costa; several short black transverse lines at the base and a brown fascia across the middle broadest at the costa, bounded by black lines forming an imperfect oval on the disc, an ochreous ear-shaped spot beyond, with 3 small and 3 larger spots of the same colour, posterior margin purplish-brown with a sinuated and dentated striga irregularly edged and spotted with black: inferior wings pale ochreous, fuscous towards the margin, the nervures darker with 2 short ochreous denticulated strigæ near the anal angle, with darker brown between them: cilia brownish.

In the Author's and other Cabinets.

THE two species I have included in this genus are undoubtedly closely allied: the larvæ are very similar, and the moths, although varying a little in outline, rest with their wings folded longitudinally in a very peculiar manner, giving them a carved and angular appearance. Hübner has placed them in the same

Coitus, but Mr. Stephens has made a new genus for *P. lucipara*, and removed it nearly 30 genera from *P. meticulosa*.

1. *P. lucipara* Linn.—*Curt. Brit. Ent. pl.* 619. ♀. of the natural size; the larva is copied from Hübner.

By no means a common species; it is however widely distributed over this country. The Moth makes its appearance the middle and end of June on banks and the skirts of woods; it has been noticed near Carlisle, in Northumberland, Norfolk, Epping, Darent and Coomb Woods, the New Forest, Glanville's Wootton, and Teigumouth, Devon. It has been observed in France to be attracted in the evening by a sweet liquor which exudes from the leaves of a Willow. The Caterpillar feeds on *Rubus fruticosus* and *saxatilis*, *Rumex acetosa*, *Lactuca sativa*, *Matricaria Chamomilla*, *Trifolium Melilotus*, *Echium vulgare*, *Anchusa officinalis* and *Chelidonium majus*: when about to transform they inclose themselves in a case of earth slightly glued together.

2. *P. meticulosa* Linn.—*Don. v. 4. pl.* 139.

Pale ochreous marbled with pink, bright brown, or green: palpi obtuse; superior wings elongated, the posterior margin sinuated towards the anal angle, a large subtrigonal brown fascia across the middle, bearing a trapezate spot adjoining an ear-shaped one, all having pale margins; costa with several strigæ at the base, and a large trigonate very smooth brown space on the inferior margin before the fascia, beyond which is a brown sinuated line with a denticulated striga, parallel to the posterior margin, not reaching the apex and terminated by a lunule with a brown margin: cilia of a burnt colour where the margin is cut out: inferior wings margaritaceous, with 3 strigæ and a lunate spot on the disc fuscous, the nervures and edge of the posterior margin brown: basal joint of tarsi very long. Sometimes the superior wings are of a rosy brown colour, at others inclining to olive or green.

This beautiful Moth is abundant, I believe, all over Europe, and with us it is found in every garden and hedge from Edinburgh to the extreme south: it appears from the beginning of April to the end of November, excepting, I believe, the month of August.

The Caterpillars feed on numerous plants, amongst which are the Stock, Wormwood, *Beta vulgaris*, *Urtica dioica* and *urens*, *Mercurialis annua*, *Poterium Sanguisorba* and *Primula vulgaris*; they often live through the winter, and sometimes spin a cocoon in the earth like the *Cucullia* and at others neglect to do so; whether this depends on the season has not been noticed.

The Plant is *Rubus saxatilis*, Stone Bramble, from Ross Island, Killarney, and Arncliffe, Yorkshire.



Anthrenus fracticornis
 Described by Curtis London June 1 1825

Bosc. II 32 p 5

THYATIRA BATIS.

The Peach-blossom Moth.

ORDER Lepidoptera. FAM. Noctuælitæ Lat. Noctuadæ
Leach.

Type of the Genus Noctua Batis Linn.

THYATIRA Och. Noctua Linn., Fab., Haw.

Antennæ alike in both sexes, rather short, composed of numerous transverse joints, clothed with scales above, with short hairs beneath (fig. 1 a).

Labrum distinct, short, triangular (2 a).

Mandibles distinct, short, rounded, ciliated with a few bristles (2 b).

Maxillæ as long as the antennæ, with a few hairs at the base, covered with projecting glands from the middle to the apex (3).

Labial Palpi obliquely porrected, distant, 3-jointed, longer than the head, covered with long hairy scales, the terminal joint clothed with short close scales only (4); 1st joint short, 2nd long attenuated, 3rd as long as the 1st, slender, conical (4 a, the scales being removed).

Head transverse. Thorax clothed with long light scales, forming a transverse crest. Abdomen rather long and slender, with a small tuft of scales on the back near the base. Wings deflexed, superior, slightly hooked at the posterior angle, inferior wings large. Tibiæ; anterior, with a compressed spine on the inside; middle and posterior tibiæ with a pair of spurs at their apex, one being very small, the posterior pair having also 2 spurs below the middle.

Larvæ with 6 pectoral 8 abdominal and 2 anal feet.

BATIS Linn. Syst. Nat. 2. 836. 97. Fab. Ent. Syst. v. 3. pars 2.
p. 30. n. 73. Haw. Lep. Brit. p. 245. n. 254.

Head, antennæ and thorax pale brown, the latter with 4 transverse rosy bands. Superior wings brown, darkest towards the base, with several crenated dark transverse lines, a large flesh-coloured spot at the base, clouded with brown, 2 large somewhat oval rosy spots approximating, one at the apex the other near the costa, another of the same size at the posterior angle, with a brown spot in the middle, and 2 smaller rosy spots, one upon the posterior the other upon the interior margin. Inferior wings fuscous-ochraceous, with a pale line near the centre parallel to the margin. Abdomen of the same colour.

In the Author's and other Cabinets.

THIS moth, which when perfect is one of the most lovely our island produces, is occasionally met with in the evening, flying

if Batis is the same as the Batis of the author of the "Lepidoptera of the British Islands" p. 245.

about the skirts of woods, from the middle of June to the middle of July: the caterpillar (which is copied from Roësel) is remarkable for its gibbosity, and the bifid tubercle upon the back, towards the head; it feeds upon the bramble.

Noctua derasa Linn. (figured in Donovan's *Brit. Ins.* v. 7. p. 223. f. 1.), the other British species comprised in the genus *Thyatira* is also very beautiful, and of more frequent occurrence than *T. Batis*; it is found in the same situations, from the beginning of July to the 1st week in August.

The plant figured is *Rubus fruticosus* (Common Bramble).

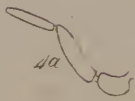


Illustration of the life history of the moth

TETHEA OCTOGENA.

The figure-of-80 Moth.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. 18 211-1142

*Type of the Genus, Noctua Or Hüb.*TETHEA Och.—Cymatophora Treit.—Noctua Linn., Fab., Haw.—
Bombyx and Pyralis Linn.*Antennæ* inserted on the crown of the head, close to the eyes, setaceous, sometimes pectinated in the males, clothed with scales above, very pubescent beneath, composed of numerous transverse joints (1).*Maxilla* spiral, robust, shorter than the antennæ, pubescent at the apex with a few minute glands (3).*Labial Palpi* porrected somewhat horizontally, clothed with scales, very short on the terminal joint (4); triarticulate, basal joint short, robust, 2nd twice as long, elongate-conic, 3rd rather shorter and more slender, elongate-oval (4 a).Head *very short*. Eyes *small*. Thorax *rather broad, more or less quadrate*. Abdomen *rather slender in some, short, tufted and lobed at the apex in the males, conical in the females*. Wings *ample, superior long, sometimes slightly uncinated at the apex*. Tibiæ, *anterior with a flat acute spine on the internal side, the middle pair spurred, the posterior with two pair of spurs*. Tarsi *5-jointed, basal joint the longest*. Claws and Pulvilli *distinct, the former slightly bifid* (8, a fore leg).Caterpillars *naked, fleshy, with 6 pectoral, 8 abdominal and 2 anal feet*. Pupæ *generally enclosed between the leaves of trees which are united by threads of silk*.

OCTOGENA Esp., Goda.—Octogesima Hüb., Treit.

Female. Pale ochraceous. Head and front of thorax ash-colour, the rest of the thorax and the abdomen subfuscous. Superior wings variegated with fuscous and tinted with a rosy or violet colour, especially at the base, where there are 2 obscure and 2 black waved strigæ and upon the internal one a black dot; near the centre are 2 white spots forming 80 with a fuscous striga passing round the 8, beyond which are 2 curved black lines and 2 pale ones edged with fuscous; at the apex is a black oblique curved line, and the margin is black also. Inferior wings paler, with a fuscous fimbria and 2 fuscous and obscure lines across the centre.*In the Cabinets of Mr. Dale and Mr. Hope.*

As this is an artificial genus I shall follow Treitschke in dividing the British species into sections.

* *about 1800 p. 1/2*

A. Superior wings obtuse or angulated.

* Antennæ simple in both sexes.

1. *T. duplaris* Linn., Haw.—*Undosa* Hüb. tab. 44. f. 211.—*bipunctata* Bork., Treit.—Beginning of June, skirts of woods.
2. *fluctuosa* Hüb. tab. 44. f. 212.—Haw., Treit.—m. June, skirts of woods.
3. *diluta* Fab.—Hüb. tab. 43. f. 206.—Haw.—June, trunks of trees.
4. Or. *Wien. Verz.*—Hüb. t. 43. f. 210.—*gemina* Linn. *Trans. v. 2. tab. 1.*—Don. v. 10. pl. 347. f. 3.—*flavicornis* Haw.—End of May or beginning of June, trunks of Poplars.
5. *octogena* Esp.—*Curtis Brit. Ent. pl. 272.*

This rare moth, which has never been figured in any British work, has been taken near Birmingham and Bristol, I believe in May: in France it appears in April. Godart says the caterpillar is green, with a yellow head and two longitudinal white lines on each side of the body, and that it is found in September and October on the Poplar. I am indebted to Mr. Dale for the loan of the female figured; and Mr. Hope informs me that he bred a very fine specimen last spring.

6. *T. flavicornis* Linn.—Hüb. 43. 208.—Don. 10. 352. 3.—*luteicornis* Haw.—End of March, trunks of Birch-trees.
 7. *ridens* Fab., Haw.—*xanthoceros* Bork., Hüb., Treit.—*chrysoceras* Linn. *Trans. v. 2. t. 1. f. 1—3.*—m. April, trunks of Oaks.
- ** Antennæ pectinated in the males.
8. *Viminalis* Fab., Goda.—*Saliceti* Bork., Treit.—*stricta* Esp.—*scripta* Hüb. t. 10. f. 50.—Haw.—June and end July, Woods.
 9. *Oo* Linn.—Don. 5. 179.—*ferruginago* Hüb., Haw.—*renago* Haw.—May, trunks of trees.

B. Superior wings slightly uncinated.

10. *subtusa* Fab., Haw.—Hüb. 44. 213.—*Goda v. 6. pl. 82. f. 4.*—July, trunks of the trembling Poplar, &c.
11. *gracilis* Haw. *Lep. Brit. 251.*—Mid. July, trunks of trees.
12. *retusa* Linn., Haw.—Hüb. 44. 214.—*Goda 82. 3.*—*chrysoglossa* Linn. *Trans. v. 2. tab. 1.*—Don. 10. 350. 2.—End of June and July, on the great round-leaved Willow and Sallows.

As the larvæ of this last division are different from the others in form, and enter the earth to change to pupæ, it may be hereafter found necessary to give this group the generic name of *Cymatophora*.



Publ. in Transactions of the Linn. Soc. Lond. 1820

Worcester III Pl. 39 Fig. 1

XANTHIA CENTRAGO.

The Centre-barred Sallow.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Leach.*

Type of the Genus *Noctua flavago* *Fab.*

XANTHIA *Hüb., Och.* *Noctua* *Linn., Fab., Haw.*

Antennæ rather long and robust, setaceous, composed of numerous transverse joints covered with scales above, ciliated transversely beneath (1 a, several joints magnified).

Maxillæ nearly as long as the antennæ, somewhat robust (3).

Labial Palpi projecting somewhat obliquely (4), thickly covered with long scales, the terminal joint with smaller and shorter scales (4), 3-jointed, 1st joint curved upward, 2nd very long attenuated, 3rd slender, somewhat conic-ovate (4 a, the scales being removed).

Head rounded. Thorax crested. Abdomen not very robust, cylindrical or angular. Wings deflexed when at rest, superior slightly falcate. Thighs thickly covered with long woolly scales. Tibiæ, anterior with a long flat spine on the internal side, the others terminated by a pair of spurs, the posterior having an additional pair below the middle. Tarsi 5-jointed, 1st joint rather long. Claws bifid. Pulvilli horny (8, a fore leg).

Larvæ with 6 pectoral, 8 abdominal, and 2 anal feet.

CENTRAGO *Haw. Lep. Brit. p. 236. n. 219.*

Aureous or orange-colour. Head thorax and antennæ dull reddish orange. Superior wings with a reddish brown bar in the centre, broadest towards the costa, where it is nearly obsolete, a stripe of the same colour with a sinuated edge, not extending to the apex next the cilia. Inferior wings pale, whitish at their base, reddish yellow at their margin, with 2 obscure lines of the same colour near the middle. Cilia orange brown. Beneath straw colour, reddish brown towards the margins.

In the Cabinets of Mr. Dale, Mr. Haworth, and the Author.

THE generic characters drawn above are unfortunately without a knowledge of the ideas of Hübner and Ochsenheimer

upon the subject; and the only minute difference I have been able to detect, is the peculiar ciliation of the underside of the antennæ: as a natural group, however, they have long been recognised and known in this country by the appellation of *Sallows*, and are remarkable for the fine orange and brown tints that ornament their upper wings. *Noctua croceago* Fab., from its depressed body and the different character of its palpi, will probably form a distinct genus; and *Noctua citrina*, and *N. helvola*, will form divisions of our group;—with these there are 8 indigenous species of this beautiful genus.

1. *X. centrago* Haw., Nob.
2. *aurago* Fab.
3. *flavago* Fab.
4. *fulvago* Linn.—*rubago* Don. v. 10. pl. 338. f. 2.
5. *gilvago* Fab.
6. *citrago* Linn.
7. *citrina* Don. v. 10. pl. 340. f. 2.
8. *helvola* Linn.

The rare species figured was first described by Mr. Haworth in his *Lepidoptera Britannica*, and appears to be unknown upon the Continent, the only species approaching it being the *Noctua Xerampelina* of Hübner.

The caterpillar most likely feeds upon the Sallow, as the specimen that I found in 1813 resting upon a plant in some meadows at Costessey in Norfolk, was within a few yards of a willow-ground. Mr. Howard Sims found a specimen about the same time, which is, I believe, in the British Museum. Mr. Haworth records another specimen taken in Norfolk by the Rev. T. Skrimshire; and the beautiful female figured, came to a lighted candle at Glanville's Wootton, Dorset, and was taken by Mr. Dale, 26th Sept. 1816.

Saxifraga granulata (White Saxifrage) is figured in the plate.



Agrostis Canadensis L. 1753

GORTYNA MICACEA.

The rosy Rustic.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. *V. 2 p. 110*

Type of the Genus *Noctua flavago* Esp.

GORTYNA Och., Treits.—*Noctua* Esp., Fab., Hüb., Haw., Och., Goda., &c.—*Phælena* Don.

Antennæ inserted on the crown of the head, close to the eyes, setaceous, more robust in the males than females, clothed with scales above, pubescent beneath (1).

Maxillæ spiral, slender and attenuated, considerably shorter than the antennæ and furnished with a few tentacula at the apex (3).

Labial Palpi porrected obliquely, thickly covered with scales, long beneath, the apical joint distinct (4); triarticulate, basal joint short, curved upward, 2nd long slender and slightly attenuated, 3rd suboval and compressed at the apex (4a).

Head short, thickly clothed with scales. Ocelli 2. Eyes oval (7).

Thorax broad, subquadrate, slightly crested and trilobed behind.

Abdomen obtuse, dilated at the apex in the males, rather long and conical in the females. Wings forming a triangle when at rest, and slightly deflexed, superior sublanceolate, cilia slightly indented.

Tibiæ, anterior very short, obtrigonal, producing a spine on the internal side, middle and hinder pair spurred, the latter with 2 spurs above the apex. Tarsi robust, not much longer than the tibiæ, excepting the anterior, producing short spiny bristles beneath, 5-jointed; basal joint the longest. Claws small and bifid (8†, hind leg).

Larvæ fleshy, producing only a few short hairs; with 6 pectoral, 8 abdominal, and 2 anal feet.

Pupæ inclosed in the stems of plants.

MICACEA Esper 6. tab. 145.—Och., Goda.—*Cyprica* Hüb.; Haw. 227. 197.

Rosy brown. *Antennæ* whitish, ochreous beneath. Superior wings with 2 strigæ near the base, the 1st abbreviated, the 2nd waved; an oblique curved even line beyond the middle forming with the 2nd a fascia, upon which are 2 spots towards the costa, one circular, the other ear-shaped. Inferior wings pale ochre, the cilia darker, the nervures, a striga parallel with the margin and a crescent-shaped mark near the disc fuscous. Abdomen rather rosy, ochreous at the base.

Obs. This is a very variable species in size, colour, and strength of the markings.

In the Author's and other Cabinets.

13. 11. 11

THE larvæ of the two species of *Gortyna* found in Britain are very similar, and resemble those of *Cossus*, *Zeuzera*, *Ægeria*, and other internal feeders in their fleshy appearance, and in producing only a few short and scattered hairs; a portion also of the 1st pectoral articulation immediately behind the head appears to be horny and polished like a scale, as it frequently is in caterpillars of similar æconomy. It seems, indeed, that where the habits of very different types are alike in any one of their stages, there is not uncommonly such an analogy in appearance and structure, that were it not for the dissimilarity in the other stages, we should be justified in considering such resemblances close affinities: it is therefore evident that extensive knowledge and the most scrupulous investigation are necessary to avoid error and arrive at truth.

The works of Sepp and Hübner, of Messrs. Treitschke, Duponchel, and Dr. Horsfield, are daily throwing light upon this beautiful order, the natural arrangement of which is extremely difficult, and no portion more so than the Noctuidæ. They may however be formed into large groups by the larvæ, some having sixteen, others fourteen feet and less: the former of these might be again divided by a most characteristic mark which no one has taken advantage of,—a large portion (of which *Agrotis* is the type) *crossing* their superior wings horizontally when at rest; the remainder having them *meeting* over the back, and forming a triangle more or less deflexed.

1. *G. micacea* *Esp.*—*Curtis Brit. Ent. pl. 252.*

Was formerly considered a rare insect in this country, but is now in most cabinets; and Mr. Stone has received a very fine series from Ireland. The caterpillar and the plant (supposed by M. Duponchel to be one of the *Cyperaceæ*), are copied from Hübner. The moth I have taken in July by the sides of ditches in Norfolk; and the female figured was found in Battersea Fields the middle of August, by Mr. C. Fox.

2. *G. flavago* *Esp., Hüb., Och., Goda.*—*rutilago* *Fab.*—*Lappæ* *Don. 10. 340. 1.*—*ochracea* *Hüb. Beyt., Harv., Sepp. v. 1. p. 13. tab. 4.*

This beautiful moth is found the middle of September in the neighbourhood of the Burdock (*Arctium Lappa*), in the stems of which the larvæ feed; they destroy the pith; and Dr. Stephenson informs me they may be found in June in the heat of the day, by the drooping of those plants which contain the caterpillars; holes will also be found in such stems; and if they be cut down and placed in water, they may be easily reared. They are said also to attack *Verbascum Thapsus*, *Scrophularia aquatica* (Pl. 32), and *Sambucus nigra*.



Peplis portula

NONAGRIA VECTIS.

The Isle of Wight Wainscot Moth.

ORDER Lepidoptera. FAM. Noctuidæ. *Diaperinae*

Type of the Genus, Noctua Typhæ Hüb.

NONAGRIA Och., Goda, Curt.—Noctua Hüb., Haw., &c.

Antennæ inserted on the crown of the head close to the eyes, rather long in the male, each joint producing beneath a transverse line of hairs (1 ♂): simply pubescent beneath in the females (1 ♀).

Maxillæ spiral, not very long (3).

Labial Palpi projecting a little beyond the head, thickly clothed with scales, very short on the apical joint (4); triarticulate, basal joint the stoutest and curved, 2nd twice as long and slightly attenuated, 3rd small elongate-ovate (4 a).

Males smaller than the females. Head subtrigonal thickly clothed with short scales: eyes rather prominent and orbicular: ocelli 2. Thorax scarcely crested, trilobed behind. Abdomen long, cylindrical and slightly tufted at the apex in the male. Wings deflexed when at rest; superior not longer than the body, somewhat elongate-trigonal, the apex acute, the inferior angle rounded; inferior wings much shorter than the body, the margin slightly sinuated and dentated. Legs stout, anterior very short: tibiæ, anterior with an internal spine, the others compressed, thickly clothed with scales and terminated by very unequal spurs, the posterior pair having similar spurs above the apex: tarsi longer than the tibiæ, 5-jointed, basal joint long: claws minute (8 †, hind leg).

Obs. The dissections are taken from Noctua crassicornis Haw.

Larvæ with 6 pectoral, 8 abdominal and 2 anal feet, long slender and fleshy.

Pupæ fusiform, inclosed in a slight web in the stalks of Reeds. Och.

VECTIS Curt. Guide, Gen. 869. 6.

Pale ochreous: underside of antennæ ferruginous: eyes fuscous: abdomen freckled with black, the down at the base white: superior wings alternately marked with numerous longitudinal ochreous and cream-coloured lines, the nervures being pale; the central nervure suffused with reddish ochre, as well as the one next the interior margin which is slightly freckled with black; at the disc is a fuscous dot and an imperfect curved line of similar dots between it and the posterior margin, which bears 7 black dots, the posterior angle emarginate: inferior wings white, slightly tinted with ochre and freckled with brown below the centre, where there is a pale spot shining through from beneath, the obscure line of fuscous dots is continued across these wings, they are somewhat oval, and there are a few dark dots on the margin; the underside of the tarsi and the spines are ferruginous. Beneath cream colour, partially freckled with fuscous and having a dark dot, near the centre of each wing.

In the Cabinets of Mr. Dale and the Author.

NONAGRIA VECTIS 11/12/03

OCHSENHEIMER's genus *Nonagria* is so nearly related to *Leucania*, that, excepting the strongly ciliated antennæ of the males, there is no character in the former that is not approached too nearly by the latter to justify their being distinguished as genera.

The following are British species of this rare genus, two of them having been first recorded in my Guide:—

1. *N. Typhæ* *Hüb.* 88. 415.—*Goda*, pl. 106. 8.—*Arundinis Fab.*

The larva lives in the stems of bulrushes, and closes the hole, by which probably in most cases it entered, with a silk web. It has been ascertained by M. Duponchel, that although the caterpillars live in an ascending attitude, viz. with their heads uppermost, the chrysalis is always placed the reverse, with the head downwards, the hole for its exit being below it! The moth appears the middle of August.

2. *N. Cannæ* *Och.*—*Goda*, 106. 3.—*Algæ Esp.*—*Arundinis Hüb.* 83. 386 and 387.

The caterpillar lives also in *Typha latifolia* and *Carex riparia*. The moth appears the beginning of August.

As the antennæ are said to be filiform in both sexes, it is doubtful if this moth does not belong to the genus *Leucania*.

3. *N. pilicornis* *Haw.*—*Ste. pl.* 29. f. 1.

Taken near Croydon in September.

4. *N. crassicornis* *Haw.* 173. 36.

A male was taken by Mr. J. Hooker many years since in Norfolk; and the female in my possession was captured by the late Mr. T. Mack, in a marsh at Hellesdon in the same county.

5. *N. lutosa?* *Hüb.* 48. 232.

I have a specimen agreeing pretty well with the above figure, that was taken in Derbyshire.

6. *N. Vectis* *Curt. Brit. Ent. pl.* 459.

I took a female amongst reeds and rushes near Black-gang Chine, in the Isle of Wight, the end of July; and another was captured by Mr. B. Standish at Whittlesea Mere, the middle of the same month.

The Plant is *Peplis Portula* (Water Purslane).



Festuca sulcata var.

LEUCANIA LITORALIS.

The Sea-shore Wainscot.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Leach.*

Type of the Genus Noctua pallens *Linn.*

LEUCANIA *Och.*—Heliophila *Hüb.*—Noctua *Linn., Fab., Haw.*

Antennæ rather long, robust, setaceous, nearly alike in both sexes, inserted on the crown of the head close to the eyes, composed of numerous transverse joints covered with scales above, thickly ciliated beneath (fig. 1).

Maxillæ setaceous, nearly as long as the antennæ (3).

Labial palpi not longer than the head, nearly vertical, approximating, thickly covered with long scales, excepting the last joint upon which they are short (4); 3-jointed, basal joint horizontal, subreniform, 2nd long, slightly attenuated, 3rd slender, elongate-ovate (4 a).

Head *subtrigonal*. Thorax *woolly, not crested*. Abdomen of the males *linear, tufted at the apex*; of the females *elongate conic*. Wings *deflexed when at rest, anterior rather narrow, and acute at the apex*; nervures appearing raised. Thighs *thickly covered with long woolly scales*. Tibiæ, anterior *short with a dilated spine on the internal side*, 2nd pair terminated by very long spurs, the 3rd pair having also 2 above the apex. Tarsi long 5-jointed, producing 3 rows of bristles beneath, the basal joint long in the 4 posterior. Claws *bifid*. Pulvilli distinct (8, a fore leg).

Larvæ with 6 pectoral, 8 abdominal, and 2 anal feet.

Pupæ inclosed in a web.—Ochsenheimer.

LITORALIS *Nob.*

Pale and dull ochraceous. Antennæ pale above, dark beneath. Abdomen darkest towards the apex. Superior wings fuscous in the middle with a white stripe down the centre, slightly produced midway at the nervure, and furcate towards the extremity, 3 small white stripes upon the nervures near the apex, and 6 fuscous lines between the nervures at the posterior margin. Cilia fuscous. Inferior wings white tinged with yellow. Underside whitish, thorax and abdomen pale and dull ochraceous, with a tuft of black hair at the base of the latter.

In the Cabinet of Mr. Dale.

LEUCANIA, a genus of Ochsenheimer, approaches very near to two others of the same author, *Nonagria* and *Simyra*: the former of these, however, is characterized by its shorter and broader wings more rounded at the apex, as well as by a longer and more slender abdomen; and the caterpillars live together in the stalks of reeds, feeding upon the pith and undergoing their transformation there, in which they resemble the genus *Gortyna* that follows them: the males of the latter (*Simyra*) have strongly serrated antennæ, and the larvæ undergo their metamorphosis in a thick papyraceous web attached to a leaf, as represented by Sepp.

The following are British species:

1. *L. comma* Linn.—*turbida* Hüb. Found in lanes, &c. from the beginning of June to the middle of July.
2. *litoralis* Nob. This unique specimen appearing to be undescribed, we have named it from its locality, it having been taken the 8th of July 1824 off some rushes upon the sand hills at Mount Misery, near Christchurch, on the coast of Hampshire.
3. *punctina* Haw.—*Ectypa* Hüb. July; shady places.
4. *pallens* Linn. July to September; meadows, hedges, and gardens.
5. *rufescens* Haw.—*lutosa* Hüb.? July and August; marshes, gardens, &c.
6. *obsoleta* Hüb.—*fuliginosa* Haw. End of July; shady places.
7. *pudorina* Hüb. mas.—*impudens* Hüb. fem.
8. *fulva* Hüb. July; Whittlesea Meer.
9. *pygmina* Haw. August; skirts of woods.
10. *geminipuncta* Haw., *Ent. Trans. pl. 9. fig. 1.* August or September; marshes, Hackney, Mr. Hatchet.

The last species may belong to the genus *Nonagria*, but we cannot at present decide with accuracy, for want of specimens.

The plant *Festuca rubra* var.? (Creeping Fescue-grass) was gathered on the sea coast.



Del. by Carlos Inden. 1843

CUCULLIA ASTERIS.

The Starwort Shark Moth.

ORDER Lepidoptera. FAM. Noctuidæ Leach, Lat. *xi. Noctuidæ.*

Type of the Genus *Noctua umbratica* Linn.

CUCULLIA Schrank, Och. *Noctua* Linn., Fab., Haw. *Tribonophora* Hüb.

Antennæ long, setaceous, composed of numerous short joints, covered with scales above, first joint the largest, with a tuft of hair beneath (1. and 1. a. the basal and a few following joints).

Labrum and *Mandibles* attached to the clypeus.

Maxillæ nearly twice the length of the antennæ. (3.)

Labial Palpi curved upward, not so long as the head, thickly covered with loose scales, terminal joint appearing naked, having only short close scales, (4.) first joint long, curved, second long, slightly attenuated, third small, spherical. (4. a. the scales being removed.)

Head rather small, obtuse (7. a.) Thorax with an elevated crest.

Abdomen long, somewhat deflexed, frequently with tufts upon the back, and sometimes with a long pointed or divided apex. Wings deflexed, superior lanceolate, inferior rather small. Legs clothed with hair. Tarsi 5-jointed, with a row of spines on each side beneath.

Claws all bifid. Pulvilli terminated by a horny process.

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal membranaceous feet of equal size.

ASTERIS Fab. *Ent. Syst. t. 3. pars 2. p. 121. n. 364.* Haw. *Lep. Brit. p. 168. n. 22.*

Cinereous tinged with lilac, head and thorax somewhat rufous. Abdomen fuscous, with tufts down the back, deep brown. Superior wings entire deep chesnut along the costa, with streaks of pale rufous; two irregular broken spots near the centre: Interior margin deep chesnut with lines of cinereous and black, and a lunulated transverse spot cinereous and chesnut, cilia fuscous. Inferior wings fuscous, cinereous at the base, cilia pale testaceous.

In the Cabinets of Mr. Blunt and Mr. Thompson.

THIS very natural group was first established as a Genus by Schrank under its present name *Cucullia*, from the strong resemblance which the crest has to a hood; it also forms the division "*Lanceolata*" in Haworth's *Lepidoptera Britannica*. The Genus contains 11 British species, 1. *C. umbratica* L.;

2. *Lactuca* F.; 3. *lucifuga* Hüb.; 4. *fissina* Haw.; 5. *Tanacetii* F.; 6. *Gnaphalii* Hüb.; 7. *Chamomillæ* F.; 8. *Asteris* F.; 9. *Verbasci* L.; 10. *Scrophulariæ* Hüb.; 11. *Absinthii* L.; most of them derive their names from the plants upon which the caterpillars feed, and many of the Moths are to be found in July resting upon pales during the day, or flying about flowers in the evening, when they are very strong upon the wing.

The caterpillars, which vary considerably in colour, have great muscular power, are very lively, perfectly smooth, and have a fleshy appearance.

For the following account, as well as a drawing of the Caterpillar, I am indebted to the kindness of Mr. Blunt. "On the 24th Sept. 1821, at Darent, in a part of the wood which had been cut down the preceding spring, I found three larvæ feeding on the flowers of the *Solidago virgaurea*, from which on the 2nd of July following I bred one, and two or three days afterwards another specimen of *Cucullia asteris*: from the situation in which I keep my breeding cages, I feel satisfied that the time of an insect's appearance with me and in a natural state corresponds precisely; in this particular instance I am perfectly convinced of it, from the circumstance of my taking another specimen whilst mothing (on the same spot where I took the larvæ) towards the end of the month; it was somewhat wasted, as would be the case with an insect that had been out two or three weeks. In the following autumn I again found the larva, and bred a specimen of the moth on the 20th July: the difference of time between this and the preceding year, may be accounted for from the severity of the winter of 1822-3, which would cause all insects that had been in the pupa state during that season, to be later than usual in their appearance."

Although our insect evidently is attached to the *Solidago*, it feeds also upon the Chinese Aster (*Aster Chinensis*) from which it receives its specific name; and C. J. Thompson, Esq. of Fulham, beat a considerable number off a Copper Beech in his garden (one of which he reared): this specimen is smaller and not so brilliant in colour as the others; it is therefore possible it may be another species, differing materially only in the caterpillars, and this is the more probable because it is general throughout the Genus.

Solidago virgaurea (Common Golden Rod) is represented in the plate.



cf. Macleod fl. 12
 Boiss fl. 104

Delphinium consolida



W. G. Peckham, London, July 1, 1885

Delphinium consolida

W. G. Peckham, London, July 1, 1885

CHARICLEA DELPHINII.

The Pease-blossom Moth.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. 80

Type of the Genus Noctua Delphinii Linn.

CHARICLEA Stephens's MSS. Noctua Linn., Fab., Haw.

Antennæ long setaceous, composed of numerous short joints covered with scales above, hairy beneath, 1st joint large, concealed by long hairy scales (1 a, the basal and a few following joints).

Labrum and *Mandibles* attached to the clypeus.

Maxillæ nearly as long as the body, with a few glands like tentacula towards the apex (3).

Labial Palpi rather short, curved upward, covered entirely with long hairy scales (4), 3-jointed, 1st joint long cylindrical, 2nd shorter somewhat ovate, 3rd small ovate (4 a, the scales being removed).

Head trigonate viewed from above. Abdomen without tufts of scales, apex of the male slightly bifid. Wings deflexed, superior somewhat lanceolate, inferior rather small. Cilia very long. Legs clothed with soft hair, anterior rather short. Tibiæ, anterior very short, trigonate, with 2 horny naked spines at the apex, the internal one being very long and curved. Tarsi 5-jointed, armed with rows of spines beneath, 1st joint long. Claws minute bifid. Pulvilli distinct, (8 a fore leg).

Caterpillars with 6 pectoral, 8 abdominal, and 2 anal feet.

DELPHINII Linn. Syst. Nat. 2. 857. 188. Fab. Ent. Syst. v. 3. pars 2. p. 90. n. 267. Haw. Lep. Brit. p. 248. n. 261.

Pale ochraceous, inclining to fuscous. Superior wings with a large trilobed fascia at the base, and a narrower one towards the posterior margin rosy-lilac, edged with brown; the centre of the wing forming a bar variegated with pale rosy-lilac, broadest at the costa, margins described by a sinuated double line; towards the top of this fascia are situated 2 spots, that nearer the base small, pale, circular; the other nearer the extremity, large somewhat oval, lilac-colour, with a line extending from it to the interior margin; posterior margin pale with a dark line next the cilia. Inferior wings with a transverse spot near the middle, and a fimbria fuscous, posterior margin rosy with a dark line next the cilia.

In the Cabinet of Mr. Stephens.

MR. STEPHENS has named this genus, after a beautiful Nymph, *Chariclea*. There can be no doubt of its affinity to *Cucullia* (pl. 45.), not only from the habit of the moth, but also from the similitude of its larvæ to those of *C. Scrophulariæ* and *Verbasci*: the tufted basal joint of the antennæ, as well as the form and relative proportions of the joints of the palpi, also accord extremely well with those of *Cucullia*. There are, however, decided differences to be found; the maxillæ, wings and abdomen are much shorter in *Chariclea*, the palpi are completely concealed by scales, the underside of the antennæ is very hairy, and the anterior tibiæ are shorter than the basal joint of the tarsi; but the most valuable character I have been able to detect, is the two naked horny spines attached to the extremity of the anterior tibiæ, a conformation which I have never seen in any other species. Upon referring to plate 45 it will be seen that *Cucullia* has only a flat internal spine, like most of the *Noctuadæ*.

This charming moth is no less esteemed for its rarity than for its lovely colours; the specimens in Mr. Stephens's cabinet, as well as those in the British Museum, are from Windsor; and it has once been taken by the late Mr. Jones in his garden at Chelsea. Its favourite food is the larkspur: it therefore ought to be met with in Cambridgeshire and districts where that plant abounds in a natural state. It is, however, probable that it is one of those insects, which, if not periodical, appears in very small numbers; which opinion is strengthened by the fact that it is very rare upon the Continent, where it fetches very high prices; and we are informed by Mr. Haworth, that the great patroness of Natural History, the late Duchess of Portland, possessed only a wing of the moth found in a spider's-web at Bulstrode. In Wilks's days (1773) it was bred, he says, by the Honourable Mrs. Walters, and by Nathaniel Oldham, Esq.

The caterpillar is copied from an admirable figure in Hübner's scarce and valuable work. The moth appears in June and July.

Delphinium Consolida (Wild Larkspur) is figured in the plate; for specimens of which I am indebted to Professor Henslow.



731.

PLUSIA ILLUSTRIS.

The purple shades.

ORDER Lepidoptera.

FAM. Noctuidæ? *cf. Plusia**Type of the Genus, Noctua Gamma, Linn.*

PLUSIA Hüb., Och., Goda., Curt.—Phytometra Haw.

Antennæ inserted on the crown of the head, close to the eyes, moderately long, very slender and setaceous, basal joint short and stout, producing a pencil of scales above, 2nd short, the remainder subquadrate, scaly above, velvety beneath (1), tapering and slightly pubescent towards the apex, where the joints are more turbinate, apical joint small, ovate-conic.

Maxillæ considerably longer than the antennæ, very spiral and tapering (3). *Palpi* minute, forming a capitate joint surrounded by longish scales (3 a).

Labial palpi recurved obliquely a little beyond the head (4), densely clothed with long scales, excepting the apical joint which is very distinct; triarticulate, basal joint longish, cleaver-shaped, 2nd twice as long, curved and nearly linear, 3rd scarcely so long as the 1st, slender and elliptical (4 a).

Head *subtrigonate, crested*: eyes *prominent and subglobose*: ocelli *large, placed behind the antennæ (7* the profile)*. Thorax *crested behind*. Abdomen *longish and linear, with long tufts down the centre of 2 or 3 of the basal segments, the apex truncated and tufted in the male*. Wings *deflexed in repose*: superior *sublanceolate, the inner margin waved, the posterior angle a little hooked*: cilia *sometimes indented*: inferior wings *triangular-ovate*. Legs, *anterior short*: thighs *very woolly beneath*: tibiæ, *anterior abbreviated, with a short lanceolate spine on the inside, the others hairy outside, with long unequal spurs at the apex, hinder with a pair also at the middle (8 †)*: tarsi *slender with series of short spines beneath, hinder very long*.

Larvæ *semiloopers, bristly, with 6 pectoral, 4 abdominal and 2 anal feet*. Pupæ *inclosed in a soft silky cocoon*.

ILLUSTRIS Fab.—Curt. Guide, Gen. 875, 1.

Yellowish-green inclining to mouse-colour: superior wings very glossy, the nervures pale, with an oblique elliptic spot on the disc, and an auriculate one beyond and above it, placed obliquely in an opposite direction, both with pale margins, beyond the 2nd is a rosy patch; a space of the same colour at the base, bounded by an abbreviated oblique double band, dark brown outside; a flexuose line beyond the middle, rosy outside and pale internally; edge of posterior margin and a flexuose line near it pale; an orange patch at the apex, another at the middle and a third at the posterior angle: inferior wings mouse-colour, with the margin and a faint line across the middle darker: 2 tufts at the base of the abdomen subferruginous. *Obs.* in aged specimens the rosy colour and orange spots become very faint.

THE caterpillars are distinguished from the greater portion of Noctuidæ by their having only 12 feet, and they depart again from that family by the pupæ being inclosed in a silken web or cocoon. The moths are by far the most lovely group

of this tribe; the elegant form of the wings, variegated with the richest tints, the bright metallic spots and curious characters, as well as the beautiful crested thorax, contribute to make them the ornaments of a collection. They fly very swiftly, and some of them, especially *Gamma*, are frequently seen on the wing in the day; probably they are the males, and their numbers are limited; but in the evenings of summer they fly in multitudes.

1. *illustris* Fab.—*Curt. B. E. pl.* 731 ♂.—*cuprea* Esp.

Mr. Stephens states that the larva has 16 feet, and consequently he places this species with *Abrostola*; but it certainly has only 12, as my copy from Hübner shows. It feeds on the *Aconitum lycoctonum* and *Thalictrum Aquilegifolium*, and is full fed in June: the moth appears in July. It is said to have been plentiful formerly on Salisbury Plain, but, like *Sphinx Nerii*, it may be only a casual visitor to this island. Mr. Donovan took it in South Wales.

2. *Festucæ* Linn.—*Wood, pl.* 16. f. 407.—*Don.* 2. 46. End of June, very fine, at Horning; middle of August, marshes and ditches near London.

3. *chalsytis* Esp.—*Goda, pl.* 136. f. 1.—*Wood, pl.* 54. f. 52. The only authority for this species is, that Mr. J. Standish found it in an old frame with other Lepidoptera: it inhabits Dalmatia, Italy and the South of France, and is abundant near Florence.

4. *chrysis* Linn.—*Wood, f.* 402.—*Don.* 4. 137. End of June, hedges, weedy banks and gardens.

5. *aurifera* Hüb. *pl.* 98. f. 463.—*Wood, f.* 403. Said to have been taken near Dover, which is doubtful, as it only inhabits Spain, Portugal, Tenerife and St. Helena. The specimen alluded to in the British Museum may be a singular variety of *chrysis*.

6. *orichalcea* Fab.—*Wood, f.* 405.—*Æriferæ* Esp. August, Hethersett, H. Browne, Esq.; Newbury, Berks, and Glanville's Wootton, middle of July, J. C. Dale, Esq.; gardens, Crayford, Kent, Mr. Samouelle.

7. *bractea* Fab.—*Wood, f.* 406. Taken in Yorkshire and near Edinburgh, and I captured a fine specimen in the Isle of Bute, 27th of July; but so far from its being common in the environs of London, as stated by M. Duponchel, I never heard of a single specimen having occurred near our metropolis.

8. *circumflexa* Linn.—*Wood, f.* 404.—*flexuosa* Don. 12. *pl.* 412. Essex, on the authority of the late Mr. Drury: the specimen is now in the cabinet of Mr. Robertson, and Mr. Hewitson has taken it near Hull.

9. *biloba* Step. In Mr. Swainson's cabinet.

10. *Iota* Linn.—*Wood, f.* 398.—*Don.* 8. 265. 1.—*percontationis* Och. *var.* —*Wood, f.* 397. End of June, gardens, and July, Coomb and Darent.

11. *bimaculata* Ste.—*Wood, f.* 399.—*inscripta* Ste. A fine variety apparently of *Iota*, from Marsham's Cabinet.

12. *Gamma* Linn.—*Wood, f.* 401.—*Don.* 8. 265. 2. It is found from the earliest spring to the end of October, and is spread over all Europe and Asia to the frontiers of Siberia and China; also North America.

13. *interrogationis* Linn.—*Wood, f.* 400.—*aurosignata* Don. 13. *pl.* 453. End of June, mountains and heaths in Scotland, Yorkshire and Lancashire. I took several the 12th July at the base of Schechallion, afterwards in the Isle of Bute, and another near the Lakes of Killarney.

Specimens of *Aconitum Napellus*, Monk's-hood, were sent to me by Mr. Dale from Holt Mills, Dorset, and by Dr. Bromfield from near Shalfleet in the Isle of Wight.



HELIOTHIS SCUTOSA.

The marbled Wormwood Moth.

ORDER Lepidoptera.

FAM. Noctuidæ.

*Type of the Genus, Noctua Dipsacea Linn.*HELIOTHIS *Och.*, *Curt.*—*Heliocentis Hüb.*—*Phytometra Haw.*—*Noctua Linn.*, *Hüb.*, *Goda.*

Antennæ alike in both sexes, very slender and setaceous, rather long, inserted on the crown of the head close to the eyes, clothed with scales above, pubescent beneath (1).

Maxillæ as long as the antennæ, very spiral, inserted at the middle of the face (3).

Labial palpi short, recurved, densely clothed with short scales and projecting a little beyond the head (4), triarticulate, basal joint elongated, curved, 2nd larger, slightly attenuated, 3rd not very short, elliptic (4 a).

Head *subtrigona*: eyes *prominent and globose* (7): ocelli 2, *minute*. Thorax *robust not crested*. Abdomen *with a few tufts down the back, rather long and slender in the male, with a tuft at the apex; shorter and conical in the female*. Wings *slightly deflexed in repose; superior elongate-trigona, the apex a little pointed, cilia not short: inferior ovate-trigona*. Legs *rather long: tibiæ, anterior very short with a long and broad internal spine, very scaly externally, with two long slender spines outside at the apex* (8), *the others spined and terminated by long unequal spurs, the hinder having a pair also below the middle: tarsi rather long, very spiny beneath and 5-jointed, basal joint long: claws small*.—Obs. *The dissections are from H. Scutosa.*

Larvæ *with 6 pectoral, 8 abdominal and 2 anal feet*. *Hüb.*

SCUTOSA *Hüb. Noct. tab. 63. f. 309 ♂.*—*Curt. Guide, Gen. 876.*

Griseous: wings dark brown; superior with the nervures and an irregular striga near the posterior margin ochreous-white; three large brown spots on the disc margined with black, a spot before the first, which is the smallest, and the space between it and the 2nd, which is auriform, ochreous-white, the lower spot subovate and longitudinal: inferior wings whitish-ochre, the nervures dark, with a large greyish-brown spot on the disc, and a broad fimbria of the same colour with 2 round pale ochreous spots at the centre near the margin; apex of abdomen ferruginous: underside very similar to that of *H. Dipsacea*, being whitish variegated with ochre and brown, the spots in the superior wings and a fascia beyond them black, the spot on the under wings and the fimbria pale brownish, the edge of the latter denticulated, with 3 large whitish spots on the margin.

In Mr. Heysham's Cabinet.

THE *Heliotes* fly in the day when the sun shines, and it is said also in the evening: some of the Caterpillars form a web amongst leaves on the surface, and others enter the earth to change to pupæ.

1. *marginata* Fab.—Wood, pl. 16. f. 408.—Don. 5. pl. 150. 1.
—*umbrago* Esp.—*rutilago* Hüb.

June 10th, Brighton; 17th Enborne Berks, and Dover; Caistor and Lowestoft, Mr. Paget; July, Coomb, Birch, and Darent Woods. The Caterpillar feeds on the *Ononis spinosa* and the capsules of *Geranium pratense* (pl. 51), in August.

2. *Peltigera* Hüb.—Wood, pl. 16. f. 409.—*straminea* Don. 2. pl. 61.—*florentina* Esp.—*Barbara* Fab.

From the middle of June to the 5th of August, York, Manchester, Birmingham; in a lane near Tottenham; also by Ratcliffe; Dover and Brighton; clover fields, Glanville's Wootton, Puddle Hinton and Knowle-hill, Buckland Newton, Dorset, Mr. Dale, who found them hovering over clover and other flowers in the day time; Breach Wood, near Langport, Mr. Paul; Ashburton, Devon, Mr. Abraham.

H. armigera, which is closely allied, does great mischief sometimes to the Maize by eating the grain.

3. *Dipsacea* Linn.—Don. 10. pl. 327. 3.—Wood, f. 410.

The first Moth I can remember to have taken was a specimen of *H. Dipsacea*, which I caught in a barley field in Norfolk. Mr. Dale has seen it formerly in plenty on Dudsbury and Parley Heaths, from the middle of July to the end of August; it flies quick like *Anarta Myrtilli* (pl. 145): beginning of June, Denes Caistor, near Yarmouth, Mr. C. J. Paget and Capt. Chawner; also near Ipswich and Dartford, abundant in a clover field.

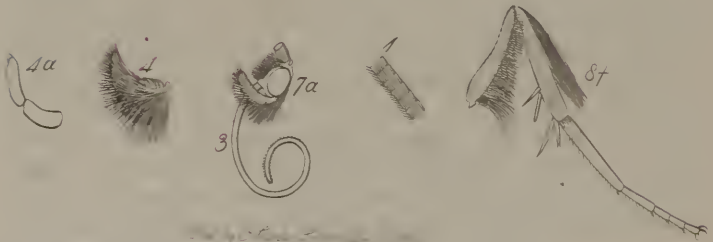
The Caterpillar, according to Treitschke, feeds upon *Rumex acutus*, *Dipsacus fullonum*, *arvensis* and *pilosus*, *Cichorium Intybus*, *Centaurea nigra*, *Jacea*, *Scabiosa* and *Calcitrapa*, *Plantago major*, *media*, *lanceolata*, *Lychnis dioica*, *Cucubalus Behen* and *bacciferus*.

4. *scutosa* Hüb.—Curt. Brit. Ent. pl. 595 ♀.

For the loan of this fine addition to our Lepidoptera, accompanied by the following memorandum, I am indebted to T. C. Heysham, Esq., of Carlisle: "I have availed myself of the first opportunity to send you the *Noctua* which I take to be a specimen of *Heliothis scutosa*; it was taken on the banks of the river Caldew, a little below the village of Dalston, in July last. I have also seen a male which was captured in August 1834, on the coast not far from Skinburness; the specimen, however, was much wasted. No other species of the genus has been met with in the vicinity to my knowledge."

The figures I have seen of this Moth are much lighter than Mr. Heysham's specimen, as is also a male presented to me with several other interesting insects by Dr. Dowler of Richmond, who took it, I believe, near Odessa. The Caterpillar feeds on *Artemisia campestris*, and most likely on other plants of the same genus: the Moth appears in May and June on the Continent, and again in July and August.

The Plant is *Agrimonia Eupatoria* (Common Agrimony).



Calluna vulgaris

Herbar. N. P. 42/177

ANARTA MYRTILLI.

The beautiful Yellow Underwing.

ORDER Lepidoptera. FAM. Noctuidæ Lat., Leach. *St. H. N. G.*

Type of the Genus Noctua Myrtilli Linn.

ANARTA Och. Phalæna Noctua Linn. Noctua Fab., Hüb., Haw.

Antennæ alike in both sexes, rather long, slender, filiform, setaceous, covered with scales above, pubescent beneath, basal joint robust ovate (fig. 1, a few joints magnified).

Maxillæ as long as the antennæ, furnished with tentacula towards the apex (3).

Labial palpi extending a little beyond the head (7 a), very hairy (4), 3-jointed, basal joint robust, slightly curved, 2nd of the same length rather less robust, 3rd small nearly obsolete (4 a).

Head very small. Eyes small pubescent. Ocelli 2 (7 a, the head in profile). Thorax not crested, covered with hairy scales. Abdomen short robust, ciliated on the sides and at the apex. Wings deflexed when at rest; superior lanceolate, inferior small. Legs, anterior the shortest, the tibiæ with a flat strong spine on the internal side, middle and posterior tibiæ very hairy towards their base, terminated by spurs, the latter having a pair also above the apex. Tarsi very long, the basal joint nearly as long as the tibiæ (8 †, a hind leg).

Caterpillars naked with 6 pectoral, 8 abdominal and 2 anal feet.

MYRTILLI Linn. Faun. Suec. 1168. Haw. Lep. Brit. 162. 9.

Head thorax and superior wings blackish, variegated with orange red and gray; two obscure curved gray lines near the base of the superior wings, a white irregular spot in the middle and an obscure kidney-shaped stigma, a dull whitish waved line beyond the middle and a white sinuated line nearer the posterior margin, cilia white, spotted with rufous: Inferior wings pale fulvous, with a broad margin of fuscous black extending round: Abdomen black yellow on the sides with 6 or 7 yellowish transverse stripes; tuft at the apex reddish.

In the Author's and other Cabinets.

Myrtilli Linn.

OCHSENHEIMER has placed *Anarta* next to *Plusia*, but we are not prepared to say whether that is its natural situation: the nearly obsolete joint of the palpi and very long basal joint of the posterior tarsi are different to any of the genera we have hitherto figured.

Three species only of this pretty genus have been discovered in Britain, although eight are known upon the Continent. They are day fliers, and love the sunshine.

1. *A. Myrtilli*.

The caterpillars are found from the end of July to October, feeding upon the heath that accompanies the figure, in Kent, Hants, and Devon. The imago is seen flying about heaths from the beginning of June to the end of August: from its swift and irregular flight it resembles *Plusia*, and is difficult to take unless it be hovering over a flower. Mr. Joseph Standish having had one live through the winter in the chrysalis state which came out the June following, he thinks there are not two broods in a year as is generally believed.

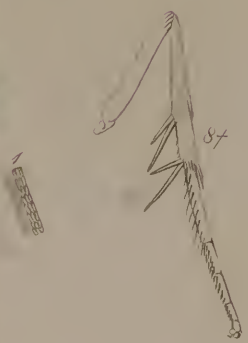
2. *A. Cordigera* *Thumb. Esp.*—*albirena* *Hüb., Haw.* 163. 10.

This insect was taken in Norfolk in June by the late Mr. Burrell, and is preserved in the cabinet of A. H. Haworth, Esq.; and had it not appeared to us to be merely a variety having the prevailing colour of the wings fuscous instead of crimson ferruginous, we should have given the preference to it for an example of the genus: perhaps the larvæ may throw some light upon the subject, for that figured by Mr. Donovan (vol. 7. pl. 221) is very different in markings to ours, which was in its last skin at the time it was drawn.

3. *A. Arbuti* *Fab., Don. Brit. Ins.* 10. 343. 3.—*fasciola* *Esp.*
—*Helioca* *Hüb.*

The end of May and beginning of June this pretty little noctua is seen flying in meadows and even by the road side in grassy places.

The plant is *Calluna vulgaris*, *Erica vulgaris* *Linn.*, (Common Ling).



Poppy (Papaver rhoeas) L.

ACONTIA CATENA.

The Brixton Beauty.

ORDER Lepidoptera. FAM. Noctuidæ *Lat., Leach.* 214 *Mon. F. 184*

Type of the Genus, Noctua luctuosa Hüb.

ACONTIA *Och., Treit.*—Phytometra *Haw.*—Noctua *Fab., Esp., Hüb., Haw.*—Phalæna *Sowerby.*

Antennæ simple, slender and setaceous, inserted on the crown of the head close to the eyes, covered with scales above, very pubescent beneath (1).

Maxillæ slender, spiral, as long as the antennæ, ciliated on the outside at the apex (3).

Labial Palpi curved upward and clothed with close short scales, the articulations distinct (4); triarticulate, basal joint rather more than half the length of the 2nd which is curved, the 3rd not so long as the 1st, slender and attenuated to a point (4 a).

Head broad. Eyes rather large. Ocelli 2. Thorax obovate clothed with compact depressed scales. Abdomen rather slender, tufted and obtuse in the males, subconical in the females. Wings rhomboidal or sublanceolate, the cilia rather long. Legs; anterior with an internal spine on the tibiæ; posterior pair long, the tibiæ spurred at and above the apex. Tarsi 5-jointed, basal joint the longest. Claws and Pulvilli distinct, the former bifid (8†).

Caterpillars naked, attenuated to both ends; *Fab.*,—with 6 pectoral, 4 abdominal, and 2 anal feet?

CATENA *Sowerby's Brit. Mis. p. 29. tab. 14.*—Catæna *Haw. p. 184.*

Pale cream colour, shining. Antennæ ochreous. Eyes brown. Superior wings sublanceolate, with a brown and grey spot at the base upon the costa, margined with yellow and having 3 pale lines across; a triangular one of the same colour at the middle of the costa; the posterior margin with a lilac-coloured fimbria, the internal edge yellow; close to the base of the cilia, which is yellowish lilac, is a line of white spots with lilac centres, forming a chain and decreasing in size to the apical one which is oblong, that at the posterior angle being the largest, bearing a dark purple spot with a lilac centre and a semicircular ochreous line on the outside. Inferior wings pearly white, a small portion of the margin slightly tinged with yellowish brown.

In the Author's Cabinet.

THE two *Acontia* whose habits are known are diurnal, like most of those whose larvæ have less than 16 feet; they are all rare in Great Britain, excepting the first species; and *A. Caloris* and *A. Catena* are unique.

1. *A. luctuosa* *Esp.*—*Hüb. pl.* 62. *f.* 305 & 306.—*Goda v.* 7. *p.* 350. *pl.* 121. *f.* 3 & 4.—*Italica Fab.*—*leucomelas Fues.*—This insect is found in clover and lucern fields, and on weedy banks, in June and August. The caterpillar is said to feed upon the great Plantain (*Plantago major*).
2. *A. Solaris* *Esp.*—*Hüb. pl.* 62. *f.* 307 & 308.—*Goda v.* 7. *p.* 346. *pl.* 121. *f.* 1 & 2.—*albicollis Fab.*—*ruplicola Bork.*—Taken in June, near Dover. We learn from Gødart that the caterpillars live upon Trefoils, Chenopodia, and Dandelions. It is very common near Paris, and appears twice a year, in May and August. They love to fly during the hottest part of the day in dry and arid places, especially where the *Eryngium campestre* grows.
3. *A. aprica?* *Hüb. pl.* 80. *f.* 371.—*albo-ater Haw.* 184, 68.—A specimen was formerly in the Cabinet of Mr. Tinby.
4. *A. Caloris* *Hüb. pl.* 80. *f.* 372.—The only British specimen of this fine insect known, I obtained from the Cabinet of Mr. Plastead; it was taken, I believe, in the neighbourhood of London: it is a very fine specimen, the thorax only being rubbed, probably from its running in the net.
5. *A. nigrireana Haw.* 266. 35.—In Mr. Swainson's Cabinet.
6. *A. Catena* *Curtis Brit. Ent. pl.* 276.

This elegant moth is considered the most valuable of British insects; for although it was captured nearly thirty years back, it still remains unique in this country, and is quite unknown upon the Continent. It was taken by Mr. Plastead at Brixton in Surrey, the middle of September.

The plant is *Papaver Rhæas* (Common Red Poppy).



Del. by J. Curtis. Sculp. H. & A. 1841.

ERASTRIA OSTRINA.

ORDER Lepidoptera. FAM. Noctuidæ *Leach., Lat.*

Type of the Genus Phalæna Tortrix uncana Linn.

ERASTRIA *Och.*—*Erotyla Hüb.*—*Phytometra Haw.*—*Phalæna Tortrix, Geometra Linn.*—*Pyralis Linn., Fab.*

Antennæ alike in both sexes, inserted close to the eyes on the crown of the head, rather short, setaceous, composed of numerous quadrate joints, covered with scales above, and hair beneath, basal joint elongate robust (fig. 1).

Maxillæ nearly or quite as long as the antennæ, furnished with glands towards the apex (3).

Labial palpi porrected obliquely beyond the head (7 a), remote, rather slender covered with scales (4), slightly curved, 3-jointed, 2nd joint long subclavate, 3rd smaller than the 1st, ovate (4 a).

Head short, covered with depressed scales. Ocelli two, behind the antennæ (7 a, the head in profile). Thorax not crested, covered with short scales. Abdomen slightly tufted at the apex. Wings, nearly horizontal when at rest, forming a triangle. Tibiæ, anterior with a small spine on the internal side, middle and posterior pairs armed at the apex and the latter towards the middle also with spines of unequal length. Tarsi rather robust 5-jointed, basal joint the longest. Claws simple. Pulvilli distinct (8 †, a hind leg).

Caterpillars half-loopers, with six pectoral, two abdominal and two anal feet. *Hüb.*

OSTRINA *Hüb. Noct. Genuinæ, f. 399.*

Pale ochraceous. Thorax with the centre and lateral scales cinereous, margined with ochre. Abdomen whitish cinereous. Superior wings slightly cinereous towards the base with a ferruginous lateral line, a dull irregular orange space extending across the centre, with a little obscure circle upon it, next to which is a lilac and brown fascia with blackish nervures, white and rosy towards the costa upon which are four white spots; this fascia is bounded next the posterior margin by a sinuated white line dentated internally. Cilia very long, pale at the base. Posterior wings whitish, tinged with ochre, fuscous towards the margin.

In the Author's Cabinet.

THIS genus contains the smallest insects of the family, many of them not being larger than some of the *Tortricidæ*: it is closely allied to *Acontia* of Ochseneimer, but the palpi are shorter, the larvæ are represented by Hübner with only two abdominal feet, a very remarkable character which at present is only known to occur in one other genus of *Noctuadæ*, viz. *Plusia* of the same author.

The following species are British and have been described by Mr. Haworth, with the exception of the 3rd, in his *Lepidoptera Britannica*.

- 1 *Erastria sulphurea* Linn.—Don. *Brit. Ins.* 10. 339. 1.—lugubris Fab.—Very rare, found in clover fields &c. from the end of June to the middle of July.
- 2 *argentula* Esp.—Bankiana Fab.—Olivea Hüb.—Taken the end of June amongst reeds and rushes in bogs in Norfolk by Mr. Haworth.
- 3 *ostrina* Hüb.—This beautiful and unique British insect was taken June 1825 in a dry lane at Bideford, Devon, by Capt. Charles Blomer, and very handsomely presented by him to the author.
- 4 *unca* Linn.—Panz. *Faun. Germ.* 7, 18.—Taken in June, Aug. and Sept. in marshy situations at Horning in Norfolk, Whittlesea Meer Huntingdonshire, and the New Forest Hants.
- 5 *venustula* Hüb.—In the cabinet of Mr. Haworth, from the late Mr. Honey.

It is not a little singular that specimens agreeing with *E. argentula*, *unca*, and other species of the genus have been received by Mr. Haworth from Georgia, in which no differences can be traced beyond those that constitute the slightest varieties; it is true that many North American coleoptera also are the same as our own, from which we might imagine that they had been by accident introduced into this country, and from the congeniality of the climate have become naturalized; but it is also an undeniable truth that some of the wild plants of that continent are the same as our own,—a curious and interesting fact which it is not within our province to enlarge upon.

The plant is *Circæa lutetiana* (Enchanter's Nightshade).



Hedera coccinea
Agrostis sp.

ACOSMETIA FUSCULA.

The marbled White-spot.

ORDER Lepidoptera. FAM. Noctuidæ.

Type of the Genus, *Noctua caliginosa* Hüb.

ACOSMETIA *Step., Curt.*—*Anthophila* and *Erastria* *Och.*—*Noctua* *Hüb., Haw.*

Antennæ inserted close to the eyes on the crown of the head, rather short and setaceous, clothed with scales, pubescent beneath (1 the basal part).

Maxilla scarcely so long as the antennæ, spiral, slender and furnished with short glands at the apex (3).

Labial Palpi projecting a little beyond the head, rather robust, densely clothed with short scales (4) triarticulate, basal joint short slightly curved, 2nd twice as long thickened towards the apex, 3rd joint short, rather slender and elliptical (4 a).

Head small clothed with depressed scales. Eyes globose. Thorax not crested. Abdomen slender tufted down the back at the base.

Wings slightly deflexed when at rest and forming a triangle. Tibiæ rather robust, anterior not very short, with an internal slender lobe, intermediate and posterior pair armed with spurs at their apex, the latter with a long pair at the middle also. Tarsi 5-jointed, basal joint the longest. Claws and Pulvilli very small (8 + hind leg).

Larvæ with 6 pectoral, 6 abdominal and 2 anal feet.

Obs. The dissections and descriptions are taken from the *Insect* figured.

FUSCULA *Hüb. Noct. pl. 60. f. 297.*—*Curtis's Guide, Gen. 880. n. 3.*

Brown freckled with ochre: superior wings with several transverse black waved strigæ, one before and another beyond the middle, forming somewhat of a fascia, on which are a whitish auriculate stigma, fuscous in the middle, and a small pale ring nearer the base, connected by 2 black lines and a bar below of the same color; the costa is spotted with white and there are a pale sinuated striga and a line of long black dots towards the posterior margin; a large space near the posterior angle is white, more or less suffused with brown; cilia pale, spotted fuscous: inferior wings pale fuscous. Abdomen fuscous, the edges of the segments pale ochre, with 3 tufts of black scales at the base in the male.

This species varies considerably in the color and strength of markings in the upper wings.

In the Author's and other Cabinets.

THE small Noctuæ differ so considerably from each other, that reasons might be given for separating them much further than they have been; but as their economy is at present not well known, and I do not possess all the species, I have included *A. fuscula* and its congeners with *N. caliginosa* of Hüb. with which it associates better than with *Erastria*. They may be thus divided:—

I. Abdomen rather short.

* Smooth on the back.

1. *A. venustula* Hüb. 60. 294. *Haw.* 261. 21.

This beautiful little moth I had the pleasure of taking the 10th of last June, in the neighbourhood of Bordeaux; it was flying in the evening on a common amongst bushes outside a plantation. It is very rare in England, but is said to have been taken in Epping Forest some years since; and it appears to be as uncommon in France, for it is not recorded as a native of that country in the work now publishing by Mons. Duponchel. Some, if not all, of the *Erastriæ* are day flyers, which induced me in "The Guide" to remove *A. venustula* and *fuscula*, which are night flyers, to another group.

2. *A. apicosa* *Haw. Lep. Brit.* 261. 20. In Mr. Haworth's cabinet.

* Abdomen tufted down the back.

3. *A. fuscula* Hüb. *Curtis's Brit. Ent. pl.* 356.—*fusca* *Haw.*
—*albilinea* *Haw.* 261. 19. *var.*

Found at Colney-hatch, Coombe and Bexley woods, Chiselmhurst, the New Forest, and in corn-fields, in June, at Wrentham, Suffolk. The caterpillar, which feeds on the common bramble (pl. 72.), is copied from Hübner.

II. Abdomen long.

4. *A. caliginosa* Hüb. 100. 474.—June, in the New Forest.
5. *A. lutescens* *Haw.* 260. 15.—July, near Lyndhurst, Hants.
6. *A. rufa* *Haw.* 260. 16.—*rufula* *Curt. Guide.*—Taken in Norfolk, and at Whittlesea Mere.
7. *A. arcuosa* *Haw.* 260. 17. Common the end of June, in meadows, Copenhagen-fields, Epping, &c.

Mr. Haworth having allowed me to see his *Noctua scopulepes*, I believe it to be more nearly allied to the genus *Ophiusa* than to any other group.

Rubus cæsius (Dew-berry Bush) in fruit accompanies the insects.



Demotoma salignorum



STILBIA ANOMALATA.

The false Footman.

ORDER Lepidoptera.

FAM. Noctuidæ?

*Type of the Genus, Geometra hybridata Hüb.*STILBIA *Step., Curt.*—Phalæna *Haw.*—Geometra *Hüb.*

Antennæ inserted on the crown of the head, close to the eyes, shorter than the body, slender and setaceous, clothed with scales above, pubescent beneath in the male (1).

Maxillæ short slender and spiral, not more than half the length of the antennæ (3).

Labial palpi nearly horizontal, scarcely projecting beyond the head, remote, subfiliform, densely clothed with short broad scales (4), slender and triarticulate, basal joint a little the longest, curved and dilated at the base, 2nd rather slender and linear, 3rd minute ovate (4 a).

Male rather larger than the female. Head small and clothed with short scales: eyes lateral, large, globose and prominent: ocelli distinct (7, the head in profile). Thorax small and not crested. Abdomen rather long, slender and linear, the apex tufted in the male; more ovate-conic and shorter in the female, with a small tuft at the apex. Wings folded like the *Lithosia* in repose, superior forming an elongated triangle, the shoulder and apex rounded: inferior ample, the posterior margin rounded, and slightly emarginate: cilia rather long. Legs stoutish: thighs, hinder the shortest: tibiæ, anterior short with an internal spine, the others with long spurs at the apex especially the intermediate, the posterior with a pair of spurs also below the middle (8 †): tarsi long and 5-jointed, basal joint very long, terminal one very small: claws and pulvilli very minute.

Caterpillar undiscovered.

ANOMALATA *Haw.*—*Curt. Guide, Gen.* 881. 1.—*hybridata Hüb.*

Male livid brown; wings very silky, superior darkest at the costa, on which there are a few pale dots towards the apex; a pale oval stigma placed very obliquely and an ear-shaped one beyond it on the disc, both margined with black and united by a black or brown stripe, before them is an angulated interrupted black line margined with orange, and beyond them a similar line, and near to the posterior margin is a pale sinuated line dentated towards the apex, and producing 2 or 3 black rays internally, posterior margin marked with a line of brown lunules: inferior wings pale ochreous, more fuscous towards the posterior margin, which bears a brown line, and the nervures are obscurely fuscous. *Obs.* It is only in very fine specimens that the grey in the upper wings is bright, or the angulated black lines are apparent.

Female with the superior wings of an uniform dark livid brown, the markings very obscure, and the inferior wings are more fuscous.

In the Author's and other Cabinets.

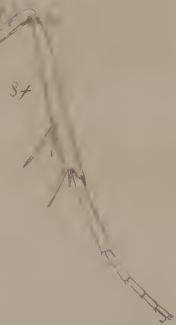
THIS is one of those anomalous types whose real affinities are not easily determined; it certainly seems to approach the Semigeometric Noctuæ, such as *Acosmetia* and *Ophiusa*, plates 356 and 475, but it likewise very much resembles the Lithosidæ, plates 499, 56, 169, and 36, not only in the shape of the wings but in its habits as far as they are known; it would be a great acquisition to ascertain the Caterpillar, as that possibly with its œconomy might throw some light upon its affinities. Hübner gives our insect as a *Geometra*, but I am not aware that M. Treitschke or M. Duponchel have noticed it; probably it is a rare species on the continent, and in England it did not appear to be known when the "Lepidoptera Britannica" was commenced, as it is not described in that work, although it was afterwards recorded in the Transactions of the Entomological Society, of which Mr. Haworth was the President.

S. anomalata is by no means a common insect in this country, although few good cabinets are without specimens. Several were taken a few years since by Mr. Dale on the low parts of Parley Common, abounding with Sweet-Gale (*Myrica Gale*), called the Withe-beds: some appeared as late as September, and I remember his taking one the 8th of August 1825, near Inversnaid Fort on our way to the Trossacs; Mr. Bentley and his friend Mr. Chant took it on the wing in the evening in the New Forest, the end of August. Mr. Heysham showed me a charming specimen taken in a fir plantation the 19th of August, near Newby Cross; Mr. Marshall captured a female on Skiddaw, and Mr. J. Standish has met with it I think in Kent; it was also discovered in Devonshire by my lamented friend the late Dr. W. E. Leach.

The Plant is *Vaccinium uliginosum*, Great Bilberry, transmitted by T. C. Heysham, Esq.



Euphyas alaudifera



Edwards, 1861, p. 100

OPHIUSA LUSORIA.

The Black-neck Moth.

ORDER Lepidoptera. FAM. Noctuidæ.

Type of the Genus, Noctua lusoria Linn.

OPHIUSA Och., Treit., Curt.—Bombyx Linn.—Noctua Fab., Hüb., Haw., Goda.

Antennæ inserted on each side the crown of the head, setaceous, clothed with scales above, pubescent beneath, with a series of bristles on each side (1).

Maxillæ as long as the antennæ, slender and spiral (3).

Labial palpi sometimes curved upward and projecting beyond the head, robust, being densely clothed with scales, the apical joint apparent (4); triarticulate, basal joint not short, 2nd twice as long, stouter and incrassated towards the apex, 3rd joint only half as long as the 1st and slender (4 a).

Head short, transverse with a tuft of hair on the crown: eyes large and globose: ocelli 2. Thorax subquadrate, trilobed. Abdomen rather long cylindrical and slender, tufted at the apex in the males, conical in the females. Wings forming a triangle when at rest and scarcely deflexed, ample and entire, superior elongate-trigonate, the apex acute, being a little hooked, the inferior angle rounded: inferior wings rounded. Legs rather long. Tibiæ, anterior short and stout with an internal spine, the others with long but unequal spurs at the apex, the posterior being elongated and having a pair also below the middle (8 †). Tarsi 5-jointed, basal joint the longest. Claws and pulvilli minute.

Caterpillars naked, attenuated to both ends; with 6 pectoral, 8 abdominal and 2 anal feet.

Pupæ folliculated, changing upon or in the earth. Och.

LUSORIA Linn.—Curt. Guide, Gen. 882. 1.

Cinereous lilac: antennæ and palpi ochreous, outside of the latter, crown of head and anterior scales of thorax, forming a ruff or collar, rich brown: anterior wings transversely freckled, forming short irregular lines; the costa and an undefined band towards the posterior margin fuscous or reddish brown; a sublunulate chocolate coloured spot on the disc, with 2 dots outside the lower cusp, and another between it and the base: abdomen and posterior wings ochreous, the latter indistinctly freckled in transverse lines, and fuscous towards the margin.

Obs. This moth varies much in the tone of its colours.

In the Author's and other Cabinets.

THE differences between the genera Ophiusa and Catephia being principally in the colour, I included them in the same

Handwritten note: 1837

genus in my Guide, and shall do so here. The larvæ of *Ophiusa*, like those of *Catocala*, have 16 feet; but I suppose they are half loopers, as Hübner places them amongst his *Semigeometræ*.

All the species, except the first, are very rare in England; and several of them probably are not native insects: they occasionally fly by day.

1. *O. lusoria* Linn. S. N. 831. 74.—Curt. Brit. Ent. pl. 475. ♂.

I have taken it in a meadow at Eccles, in Suffolk, as early as the 10th of July; but it is generally found about the middle of August, in moist woods, Yorkshire. I have observed it at Coombe, Birch, and Darent Woods. The caterpillar feeds upon the *Astragalus glycyphyllos* (pl. 208.), and is copied from Hübner.

2. *Judicra* Hüb. 65. 319.—Goda, pl. 56. 2.

This and the next species are in Mr. Swainson's Cabinet.

3. *crassiuscula* Haw. Lep. Brit. 259. 13.

Very rare in the North of England.

4. *grandirena* Haw. 264. 27.

A North American insect, a specimen of which was reported to have been caught at Bristol, and is in the British Museum.

8. *scopulepes* Haw. 260. 14.—*inops* Ste.

I included this with the *Acosmetiæ*, but it seems to be more allied to *Ophiusa*.

Specimens are in Mr. Haworth's Cabinet and the British Museum, from the Duchess of Portland's Collection.

Gen. 882^a. *CATEPHIA* Och., Treit.—*OPHIUSA* Curt.

“Wings, superior dark coloured, with sombre markings: inferior at the base, light coloured, with a broad dark margin. Antennæ setaceous, slightly pectinated. Abdomen dark coloured, with tufts of hairs on the posterior segments*.”

5. *Alchymista* Hüb. 62. 303.—Goda, pl. 53. f. 1.—*leucomelas* Linn. ?—*convergens* Fab.

Formerly in the Collections of the Duchess of Portland and Mr. Haworth.

The caterpillar feeds on the Oak and Elm, and is found in forests in France; the moth appears in June.

6. *Q. trifasciata* Ste.

Reported to have been taken by the Rev. W. Kirby at Barham.

The Plant is *Bupleurum rotundifolium* (Common Thorough-wax), communicated by the Rev. Dr. Jermyn.

* The above characters are transcribed from Mr. Children's valuable abstract of Ochseneimer's Genera, which we trust he will now resume, as the work is completed.

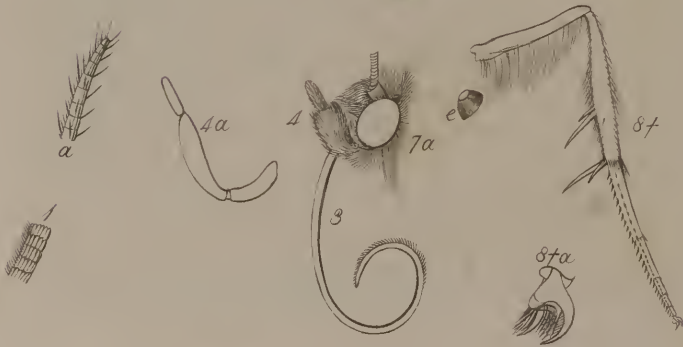


Plate by J. Curtis June 1. 1828

CATOCALA ELOCATA.

The Large Red Underwing.

ORDER Lepidoptera. FAM. Noctuidæ *Leach, Lat.**Type of the Genus Noctua nupta Linn.*CATOCALA *Schr., Och.*—*Blephara Hüb.*—*Hemigeometra Haw.*—*Noctua Linn., Fab., Goda.*

Antennæ alike in both sexes, inserted on the crown of the head close to the eyes, long, slender and setaceous, externally covered with scales, internally pubescent (1), with scattered bristles from the middle to the apex (a); basal joint the largest, cup-shaped. *Maxillæ* as long as the antennæ, convoluted, setaceous, a considerable portion of the apex ciliated with tentacula (3).

Labial palpi porrected obliquely triarticulate, densely clothed with long scales, those on the 3rd joint short (4); basal joint slightly nutant and rather long, 2nd a little bent, ascending obliquely, subfusiform, 3rd not so long as the 1st, slender, elongate-ovate (4a).

Head rather small. Ocelli, one on each side behind the antennæ (7 a : fig. e, the same removed and more magnified). Thorax large. Abdomen robust, cylindrical, attenuated, tufted on the back at the base and at the tail. Wings ample slightly deflexed when at rest, superior subtrigonal. Cilia long and indented. Legs long, anterior the shortest. Tibiæ, anterior short, with a compressed broad spine on the inside, the others spurred, the posterior with a pair towards the middle, all of unequal size (8 †). Tarsi, anterior much longer than the tibiæ, in the others of equal length, producing a double series of spines beneath. Claws bent. Pulvilli forming a lobe in the middle with a slender one very much cut on each side (8 † a). Larvæ half loopers, with 6 pectoral, 8 abdominal (the two first being less perfect than the others) and 2 anal feet.

Pupæ enclosed in a loose cocoon formed between some leaves.

ELOCATA *Esp., Och., Goda. v. 5. p. 58. pl. 46. f. 2.*—*Nupta Fab.—Marita et Uxor Hüb.*

Yellowish gray, clouded with a blueish tint. Head thorax and superior wings minutely sprinkled with black, the latter with a narrow waved striga towards the base, a dark undefined band in the middle on which are 2 large obscure auriculate spots, beyond which is a denticulated waved line, and nearer the posterior margin a regular but somewhat obscure angulose-undulated fuscous striga, and upon the margin are 7 ochreous and black dots. Inferior wings pale yellowish scarlet, with a sinuated but regularly curved dull black fascia across the middle, tapering to the abdomen; a broad fimbria of the same colour angulated towards the apex, upon the margin are a few small and one larger yellowish scarlet spots.

In the Cabinet of the Author.

THE caterpillars of a considerable number of the Noctuæ are called half-loopers, from their partially assuming the figure of the Geometradæ in walking; the transition to this latter family being beautifully sustained by some of the caterpillars which have only two abdominal feet; and in our genus the two first of the membranous feet are smaller than the others. They do not enter the earth to undergo their metamorphoses; and the chrysalides have a bloom upon them, from their being covered with powder.

The following are British species of *Catocala* :

1. *Fraxini* Linn.—Don. 5. 171 & 172.—Sepp. 1. 18. 20.

Several specimens of this fine and valuable Moth have been captured in this country. Mr. Haworth's extensive cabinet contains an example from Kent, and two specimens from Holderness, Yorkshire, one taken on the wing in August 1825. The late Mr. Francillon assured me that his specimens were bred by himself. I obtained two from Mr. Plastead's collection, and Mr. Dale purchased one in the highest state of preservation, taken by Mr. Standish the 7th of last September, resting upon paling near Birch Wood, Kent.

2. *Elocata* Esp., Nob.

The only specimen of this Moth that has come under my observation, I purchased in the late Mr. Blunt's cabinet: it had evidently been taken by some one who did not understand setting Lepidoptera, pins having been passed through the upper wings to keep them spread open. It is much larger and darker than *C. nupta*; the superior wings have an olive cast; the red in the under wings is duller: the black band is more regular in its form, and continued to the abdominal margin; and the under side is different also. The caterpillar feeds upon willows and elms.

3. *nupta* Linn., Hüb., Harw.—Don. 7. 224.—Sepp. 1. 7.—*concupina* Hüb.

A common insect, found resting upon the trunks of Willows, paling, &c. the beginning of August.

4. *promissa* Fab., Hüb., Harw.

July: trunks of trees, Richmond Park; it has been bred, I believe, by Mr. Hatchett.

5. *Sponsa* Linn., Fab., Harw., Don. 9, 324.

End of July: upon and under the loose bark of Oaks in the New Forest, occasionally in abundance. Godart considers the above two insects, as well as the *N. Dilecta* and *N. Mnesta* of Hübner, to be one species.

6. *conjuncta* Esp., Och., Goda.—*conjuga* Hüb., Harw.

Introduced into "Lepidoptera Britannica" on the authority of the late Mr. Jones of Chelsea.

* See also p. 224 (the name *concupina*, Hübner) in the original text.



Tortricus ...



Tortricus ...

EUCLIDIA GLYPHICA.

The Burnet Moth.

ORDER Lepidoptera.

FAM. Noctuidæ.

Type of the Genus, Noctua glyphica Linn.

EUCLIDIA Och., Hüb., Curt.—Phytometra Haw.—Noctua Linn., Goda.

Antennæ inserted on the crown of the head, moderately long, setaceous, clothed with long scales above, densely ciliated beneath in the male (1).*Maxillæ* as long as the antennæ, stout and spiral (3).*Labial palpi* recurved as high as the crown of the head (4), stout, attenuated, clothed with short scales, the apical joint distinct; triarticulate (4 a), basal joint stout elongated, narrowed and curved at the base, 2nd scarcely twice as long, curved at the base and slightly attenuated, 3rd slender and conical, shorter than the 1st.*Head small, subtrigonal: eyes rather small and subglobose: ocelli distinct. Thorax not very stout and rather hairy, as well as the Abdomen, which is short obtuse and tufted at the apex in the male, stout and conical in the female. Wings slightly deflexed and forming a triangle in repose: superior rather short and irregularly trigonal: inferior ovate-trigonal. Tibiæ, anterior very short, with an internal spine, intermediate furnished with several acute spines on the inside (8*) and terminated by a very long and a shorter spur; hinder tibiæ not much longer but stouter and hairy outside, with a very long and a short spur at the apex and a similar pair a little above them (8†): tarsi longer than the tibiæ, especially the anterior, spiny, 5-jointed, basal joint long: claws and pulvilli minute.**Larvæ semiloopers, cylindric, naked, with 6 pectoral 4 abdominal and 2 anal feet. Pupæ inclosed in a cocoon formed in the folds of the leaves.*

GLYPHICA Linn.—Curt. Guide, Gen. 886. 1.

In the Author's and other Cabinets.

THE Caterpillars of this group form a beautiful connecting link from the looping Noctuidæ to the Geometridæ. It will be remembered that the larvæ of *Catocala* and *Brephe* have 16 feet, whilst those of *Euclidia* have but 14, not 16 as stated by Mr. Stephens. The structure of the intermediate tibiæ is different to any others that I have examined, and seems hitherto to have passed unnoticed; the outside is rough and the inside is furnished with series of spines as represented at fig. 8*.

The two pretty species of *Euclidia* inhabiting Britain prefer chalky districts; they fly in the sunshine during the middle of the day.

1. *glyphica* Linn.—Curt. Brit. Ent. pl. 659. ♂.

Head and thorax orange-brown, abdomen black with scattered ochreous hairs, the apex more ochreous: superior wings rosy brown with a dark brown patch at the base, a broad rich brown fascia across the middle, the ground colour forming a band down the middle; sometimes there is an oval spot on the disc of the same colour, and towards the apex a triangular brown spot: inferior wings orange, the base and cilia black, as well as a fimbria more or less rayed internally, and 2 waved lines from the anal angle across the disc: underside bright orange with a black spot on the disc of each wing, and several of the lines and spots on the upper side slightly traced.

This species is widely distributed from the extreme north to the south of England: it appears the beginning of June in or near clover fields. The Caterpillar feeds upon the *Trifolium pratense*.

2. *Mi* Linn.—Wood, pl. 17. f. 448.

Griseous, superior wings with a broad blackish abbreviated fascia margined with ochre, bilobed towards the inferior margin, with a round black dot towards the costa, and a large lunate one edged externally with ochre beyond it, an ochreous striga and a row of conical black spots towards the posterior margin: inferior wings black with a large bright ochreous spot near the base and 2 waved fasciæ divided by black nervures often forming spots; cilia ochreous, spotted with black, margins of abdominal segments pale: underside orange with black spots and angulated lines.

This is a common species in clover fields in many parts of England; it has also been found in Scotland; I have met with it in lanes at Southgate the middle of May, and in June in elevated pasture land near Slaughter, Gloucestershire. The Caterpillar feeds upon *Medicago falcata*, the Clover and Lucern; and some that I found at Dover the middle of August were eating the leaves of some grass, and so nearly resembled the larvæ of *Aspilates gilvaria*, pl. 467, that until I observed the 4 abdominal feet I thought they belonged to that species of Moth.

The Plant is *Trifolium subterraneum*, Subterraneous Trefoil, communicated by J. J. Bennett, Esq.

Gen. N. Pl. 46 (17.)
cf p. 250



Pub. by J. Curtis London June 1. 1826

BREPHA NOTHA. *XVI Phalaenoidae*

The Light Orange Underwing.

ORDER Lepidoptera. FAM. Noctuidæ *Leach., Lat.*

Type of the Genus Noctua *Parthenias* *Linn.*

BREPHA *Hüb.*—Brepheos *Och.*—Hemigeometra *Haw.*—Bombyx *Fab., Haw.*—Noctua *Linn.*

Antennæ inserted at the back part of the head close to the eyes, covered with scales above. *Males*: pectinated in *B. Parthenias*, the branches clavate and ciliated (fig. 1): more robust, very pubescent and without branches in *B. notha* (fig. 1*). *Females*: filiform, slender, and clothed with long scales (1 a).

Maxillæ very long and tapering, having a dilated membranous edge and tentacula towards the apex (3).

Labial palpi covered with long spreading hairs (4), 3-jointed, 2nd joint less robust than the 1st, 3rd slender ovate (4 a).

Wings rather narrow, horizontal when at rest. Abdomen slender, of the males terminated by 2 lateral lamellæ and a dorsal incurved horny process: of the females retuse when the ovipositor is not exerted.

Legs, anterior rather short. *Tibiæ* anterior with a spine on the internal side, the others terminated by spurs, the posterior having a pair above the apex. *Tarsi* 5-jointed.

Caterpillars half-loopers, with 6 pectoral, 8 abdominal, and 2 anal feet.

NOTHA *Haw. Lep. Brit. p. 269. n. 8.*—*Parthenias* *Hüb. Schmet. Noct. 74, 341, & 342.*

Antennæ of male velvety black. Head, thorax and abdomen black, clothed with brown hair: superior wings lurid ferruginous, speckled with minute silvery scales; blackish at the base, interior and posterior margins; a black sinuated transverse line near the base, and 2 others more obscure, indented, and parallel with the posterior margin, beyond the middle; a black spot whitish in the centre, near the middle, approaching the costa, upon a pale ochraceous attenuated stripe, and 2 other pale spots nearer the apex upon the costa: cilia spotted alternately pale and black: inferior wings bright orange, with a sinuated black margin, an irregular line across the middle, uniting with a spot extending to the base, and the internal margin of the same colour: cilia yellowish, spotted black. Beneath orange, variegated with ochre: superior wings with a black spot near the centre, uniting with a blackish one upon the costa, apex partially fuscous, inferior margin and a spot at the posterior angle blackish: inferior wings similar to the upper side.

In the Author's and other Cabinets.

THE genus *Brepha* belongs to a group which, by its half-looping caterpillars (as they are termed), connects the true *Noctuæ* with the *Geometræ*; and although it contains but 2 British species, which resemble each other so much in colour and markings that it is easy to confound them, yet the antennæ of the males are so very different in structure, that they will probably by future writers be formed into distinct genera; however this may be, it is only necessary here to separate them into 2 divisions.

1st, With the antennæ of the males pectinated.

B. Parthenias Linn., figured in *Donovan's Brit. Ins. v. 7. pl. 246. f. 1. 1.*

2nd, With the antennæ of the males robust and simple.

B. notha, of which the upper side of the male and the underside of the female are represented in the annexed plate.

The antennæ of the females of the 2 species not furnishing distinctive characters, it will be advisable to state in what respects those specimens have varied in markings that have come under our inspection: and this is principally to be collected from the underside, for the upper side of the superior wings is very variable in both species, the only good character in ours being a more or less decided transverse pale abbreviated fascia arising at the costa, mid-way: the underside, however, supplies more constant characters; the dull colour that tinges the orange from the base of the upper wings does not extend to the black spot on the costa in *B. notha*, the tips are not entirely black, and the black in the under wings does not extend beyond the middle from the internal margin.

B. notha is much rarer than the other species: they are both found in March upon the blossoms of Willows, and fly during the day.

We regret not being able at present to give the name of the *Salix* that accompanies the Moth.

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C*