

A MANUAL
OF
BRITISH
BUTTERFLIES AND MOTHS.

BY
H. T. STAINTON,
EDITOR OF THE 'ENTOMOLOGIST'S ANNUAL.'

VOL. II.
(COMPRISING THE SLENDER-BODIED AND SMALL MOTHS).

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ERRATA.

- P. 53, l. 18, after "Ba." insert "Bi."
P. 53, l. 24, *dele* "Bi."
P. 91, l. 16 from bottom, for "P. PUMILATA" read "E. PUMILATA."
P. 101, l. 16 from bottom, for "C. MONTANATA" read "M. MONTANATA."
P. 101, l. 4 from bottom, for "H. GALIATA" read "M. GALIATA."
P. 102, l. 9, for "C. FLUCTUATA" read "M. FLUCTUATA."
P. 104, l. 4, from bottom, for "C. MINUTARIA" read "C. MINUTATA."
P. 180, *dele* the last three lines.
P. 263, l. 16, for "S. ALTERNELLA" read "S. ALTERNANA."
P. 369, l. 9, for "E. EPHIPPELLA" read "A. EPHIPPELLA."

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EXPLANATION
OF THE
ABBREVIATIONS USED.

SIZE.

" , used to express inches ; ' ' ' , lines, a line being the twelfth part of an inch. Thus, 1" 10' ' ' to 2" 3' ' ' means that the insect varies in size from 1 inch 10 lines to 2 inches 3 lines.

SEXES.

♂ means male ; ♀ , female.

WINGS.

F.-w., fore-wing ; h.-w., hind-wing ; u. s., under side. Unless otherwise stated, the upper side of the insect is referred to in all cases.

TIMES OF APPEARANCE.

I, January ; II, February ; III, March ; IV, April ; V, May ; VI, June ; VII, July ; VIII, August ; IX, September ; X, October ; XI, November ; XII, December.

b. m. e. beginning, middle and end of the month.

h. implies that the insect then appearing has hybernated.

s. implies that the insect only appears during that month sometimes.

LETTERS IN ITALICS,

placed between parentheses (), designate the name of the Author from whom the information in the preceding sentence is derived. The names in full explain themselves. The following are the contractions :—

Bork. Borkhausen.
Gu. Guenée.
Hub. Hubner.
Thun. Thunberg.
Treit. Treitschke.
Zell. Zeller.

LOCALITIES.

Al. Alkham, near Dover. Only used in the *Tineina*.
Ba. Barnstaple. Only used in the *Geometrina* and *Pyralidina*.
Bi. Birkenhead.
Brg. Brighton. Only used in the *Geometrina* and *Pyralidina*.
Brs. Bristol.
Ca. Cambridge.
Ct. Lower Guiting on the Cotswold. Only used in the *Geometrina*.
Da. Darlington.
Ed. Edinburgh. Only used in the *Geometrina* and *Pyralidina*.
Ex. Exeter. Only used in the *Geometrina* and *Pyralidina*.
Ha. Halton, in Buckinghamshire. Only used in the *Geometrina*.
Hu. Huddersfield. Only used in the *Geometrina* and *Pyralidina*.
Ip. Ipswich. Only used in the *Geometrina*.
K. Kingsbury, Middlesex.
L.D. The Lake District of Cumberland and Westmoreland.
Lw. Lewes.
Ly. Lyndhurst. Only used in the *Geometrina*.
M. Manchester.

- N. Newnham, in Gloucestershire. Only used in the *Geometrina*.
 Ne. Newcastle-on-Tyne. Only used from the eighth family of the *Geometrina*.
 Pm. Pembury.
 Pl. Plymouth. Only used for the *Geometrina* and *Pyralidina*.
 Sc. Scarborough.
 St. Stowmarket. Only used for the *Geometrina* and *Pyralidina*.
 Tn. Tenterden.
 Wa. Wavendon, near Newport Pagnel. Only used in the *Geometrina*.
 Wt. Worthing.
 Y. York.

Having correspondents resident in most of the above localities, a list of the species occurring in each was prepared; and hence these localities are continually cited; but this does not by any means imply that the species do not occur in other localities. (In the *Tortricina* none of these localities are cited, the localities given for that group being extracted from Mr. Wilkinson's recent work on the British Tortrices).

When any of these abbreviations are in *Italics*, it signifies that the insect has occurred there, but is not found there every year. ! signifies that the species occurs there *commonly*; !!, that it is *abundant*. Either of these marks after an abbreviation in *Italics* implies that the insect *has been* common or abundant.

EXPLANATION OF TECHNICAL TERMS.

Outline of Wing.

- Costa*, the front edge of each wing.
Base, the portion of the wing nearest the body.
Hind-margin, the edge furthest from the body.
Inner margin, the edge opposite the costa.
Tip, the part where the costa meets the hind-margin.
Anal angle, where the hind-margin meets the inner margin.

Markings.

Longitudinal, extending in the direction from the base to the hind-margin of the wing, or from the head to the tail of the insect.

Transverse, extending from the costa to the inner margin of the wing, or from one side of the body of the insect to the other.

Patch, blotch, an irregularly shaped marking, of moderate or large size.

Spot, a regularly shaped marking, of moderate size.

Dot, a minute round spot.

Band or fascia, a transverse marking, wider than a line, and of nearly uniform width.

Line, a fine thread-like marking, of uniform width.

Streak, stripe, an elongated marking, not necessarily of uniform width.

The following terms apply to the markings on the forewings of the *Geometrina*, and will be found fully explained at page 2.

first line,	abbreviated f. l.
second line,	„ s. l.
central line,	„ c. l.
subterminal line,	„ subt. l.
central shade,	„ cen. sh.
central spot,	„ c. s.

The two first of these terms are also used in the descriptions of the Crambideous group of the *Pyrilidina*.

In the Pyralideous group of the *Pyrilidina* we have markings similar to the *Noctuina*, thus :—

claviform stigma,	abbreviated clav. st.
orbicular stigma,	„ orb. st.
reniform stigma,	„ ren. st.
elbowed line,	„ el. l.
inner line,	„ i. l.
subterminal line,	„ subt. l.

In the *Tortricina* the following terms are used in the descriptions of the fore wings :—

basal patch,	abbreviated b. p.
central fascia,	„ c. f.
costal spot near the tip,	„ c. s.
ocellated patch near the anal angle,	„ oc.

Anterior, that which is in front or nearest to the head.

Attenuated, becoming more slender.

Before the middle, between the middle and the base of the wing.

Beyond the middle, between the middle and the hind-margin of the wing.

Cilia or *fringe*, the long scales projecting beyond the margins of the wing.

Fold, an oblique groove in the fore-wings, which runs from below the middle of the base to near the anal angle.

Irrorated, speckled or peppered.

Nervure, rib-vein or nerve, the framework of the wing.

Ocellated, that which has a spot with a pupil or eye-like centre.

Posterior, that which is behind or furthest from the head.

Segments (abbreviated seg.), rings or divisions of the body of the insect. A caterpillar consists of thirteen segments, numbered from the head, which is the first.

Subcostal nervure, the rib-vein or nerve which is next to the costa.

Suffused, clouded.

In this volume the special characters by which a species may be distinguished from those most nearly allied to it, are indicated by being printed in *Italics*.

A MANUAL

OF

British Butterflies and Moths.

GEOMETRINA.

These insects are so called from the peculiar mode of walking of the larvæ: this makes them appear as though measuring the ground or earth; hence Geo—meters. In common language the larvæ are called Loopers.

We have upwards of 260 British species. Their ample wings, compared to the size of the bodies, have procured for them the designation of Slender-bodies, by contrast with the NOCTUINA and BOMBYCINA, termed Stout-bodied moths.

Most of these insects sit with the wings extended in repose; some few, after the fashion of the butterflies, with the wings erect; comparatively very few conceal the hind-wings in repose, but *Anisopteryx Æscularia* does this very completely, one fore-wing even lapping over the other, which gives the insect a very peculiar appearance.

The larvæ have only ten legs; hence the reason of their peculiar mode of progression; for, having no legs under the middle part of the body, they grasp the substance on which they are walking firmly with their fore-legs, and then bring the hind-legs up close to the fore-legs, curving or looping the body thereby, and producing a good imitation of the Greek letter Ω.

The exceptions of larvæ with more than ten legs are marvellously few, and of these none have more than fourteen, the number we find in the larvæ of *Rumia Cratægata* and *Odontopera bidentata*, but here the additional legs are very rudimentary. The larvæ of *Metrocampa margaritata*, *Ellopia fasciaria* and *Aventia flexula* have each twelve legs.

In most of the GEOMETRINA there is a certain uniformity of pattern, and in describing them I have availed myself of this to introduce abbreviations. Thus, in the fore-wing of almost every species we find a dark central spot (c. s.) and between it and the base of the wing a conspicuous dark line, which I have called the first line (f. l.), and between the central spot and the hind-margin another dark line, which I have called the second line (s. l.) These are the three principal markings. Sometimes, between the first and second lines, another line is visible, passing very near the central spot; this I have termed the central line (c. l.); when it is broad and ill-defined I have termed it, as in the NOCTUINA, the central shade (cen. sh.): when I have had occasion to refer to the line which precedes the hind-margin, I have reverted to the expression of subterminal line (subt. l.)

There are seventeen families represented in these Islands, but one single family, LARENTIDÆ, comprises nearly half our species; this family includes the 'Pugs' and the great bulk of the 'Carpets'. The next most numerous family, containing little more than a fourth of the number of species in the LARENTIDÆ, is the ACIDALIDÆ, of which we have thirty-three species, mostly known by the familiar appellation of 'Waves.' Next in importance come the ENNOMIDÆ or 'Thorns,' and the BOARMIDÆ corresponding nearly to the old genera *Cleora*, *Alcis* and *Boarmia*; each of these families contains twenty-one species; the FIDONIDÆ number fifteen species, and are

mostly day-flying insects, like *Fidonia atomaria*; the EUBOLIDÆ, ten in number, are also rather active on the wing by day: *Eubolia plumbaria* ('the Belle'), and *Anaitis plagiata* ('the Treble-Bar') are familiar examples. Of the GEOMETRIDÆ, all of which are green, we have eight species, including all our 'Emeralds' but the 'Light Emerald.' Of four families we have only six species, viz., the AMPHIDASIDÆ, which are the most Bombyciform of the group (including 'the Oak Beauty,' &c.); the EPHYRIDÆ, consisting only of the genus *Ephyra*; the CABERIDÆ, of which *Cabera pusaria* ('the White Wave') may be considered the type; and the HYBERNIDÆ, of which *Progemmaria* is a good representative.

Of two families we have only five species; the MACARIDÆ, of which the Peacock moth (*M. notata*) is typical; and the ZERENIDÆ, which includes the genus *Abraxas*, and two other black and white species.

Four families have only single representatives here:—

OURAPTERYDÆ, represented by 'the Swallow-tail Moth.'

BOLETOBIDÆ, by *Boletobia fuliginaria*.

LIGIDÆ, by *Pachycnemia Hippocastanaria*.

SIONIDÆ, by 'the Chimney Sweeper' (*Odezia Chærophyllata*).

The following is the arrangement of these seventeen families:—

- | | |
|------------------|----------------|
| I. Ourapterydæ | IX. Caberidæ |
| II. Ennomidæ | X. Macaridæ |
| III. Amphidasidæ | XI. Fidonidæ |
| IV. Boarmidæ | XII. Zerenidæ |
| V. Boletobidæ | XIII. Ligidæ |
| VI. Geometridæ | XIV. Hybernidæ |
| VII. Ephyridæ | XV. Larentidæ |
| VIII. Acidalidæ | XVI. Eubolidæ |
| XVII. Sionidæ | |

... more than ten legs are mar-
... more than fourteen, the
... *Stenopus* and *Odont-*
... legs are very rudimen-
... *Stomatopoda muricata*, *Ellopius fasciaria*
...

... uniformity of
... have varied myself of this
... forewing of almost
... and between it
... line, which I have
... central spot and
... I have called the
... principal markings.
... another line is
... I have termed
... (see sh.)
... which precedes
... of subter-

... these Islands,
... nearly half our
... great bulk of
... family, containing
... species in the
... have thirty
... species mostly known by the similar appellation of "
... of "Thor"
... the old ge-
... families
... of these families
... fifteen

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wing ... these seventeen fami-

Our	Caberidæ
I. Em	Macaridæ
I. An	idonidæ
V. Bo	Zerenidæ
V. B	Ligidæ
VI. C	Hybernidæ
II.	Larentidæ
III.	Eubolidæ

Family I. OURAPTERYDÆ.

This family contains but a single European species, well known in this country as "the Swallow-tail Moth." In the southern and midland counties of England it is an abundant species, though northwards it appears scarcer, and has not yet been observed in Scotland.

It flies very wildly along hedges, at dusk, in July, and is more easily seen than caught, especially if the young collector happens to be unnerved by its large size and dashing appearance, his frantic efforts to catch *Sambucaria* being then rarely successful.

The peculiar habitation of the pupa is worthy of attentive study.

Genus 1. OURAPTERYX.

Imago: antennæ of the male simple; abdomen rather stout, smooth; wings ample, the middle of hind-margin of the hind-wings prolonged into a short tail.

Larva elongate, with projections from the 8th and 12th segments.

Pupa lively, elongate, enclosed in a cradle suspended by threads.

O. SAMBUCARIA (Swallow-tail Moth). 1" 10''' — 2" 3'''. F.-w. whitish sulphur, with numerous slender transverse streaks, very pale olive; f. l. nearly straight; s. l. slightly curved, dull olive. VII.

Larva yellowish or reddish brown, with paler longitudinal streaks; the 4th seg. rather humped, and the 7th with a lateral protuberance; the 9th and 12th slightly humped; two points project from the anal seg. On oak, elder, bramble, ivy, &c. X, XI.



Common in the South, and generally abundant; less common in the North, and unknown in Scotland.

Family II. ENNOMIDÆ.

Imago: wings generally ample, and almost always dentate and angulated; female always with wings; antennæ sometimes simple in the male, generally pectinated (in *Pericallia* pectinated in both sexes).

Larva with 10, 12 or 14 legs; the additional legs rarely used in walking; elongate, twig-like, often with humps.

Pupa subterranean or amongst leaves.

This is a glorious family, comprising many of the commonest and most beautiful of the GEOMETRINA. As early as the middle of March *Selenia illunaria* (the Early Thorn) may be obtained at rest on trees, or flying at dusk along hedges, and is so common that he who seeks for it at the end of that month, or beginning of April, is sure to find it. A month later *Odontopera bidentata* appears, and is almost equally abundant; and *Selenia illustraria*, a more local and much rarer insect. As soon as the warm weather sets in *Rumia Cratægata*, with its *brimstone* wings, enlivens our hedges with its merry gambols at sun-set; and in woods the pretty *Venilia*

maculata is very common in May and at the beginning of June. In June the more local and less common *Dolobraria* appears, and *Selenia lunaria*, which is hardly a common species; *Epione advenaria* is extremely local. At the end of June the pretty but common *Angerona Prunaria* appears, and continues through the following month. In July the local *Epione vespertaria* and the common *Apiciaria* appear; *Metrocampa margaritata* is generally abundant, and *Ellopia fasciaria* is common in fir woods; the singularly pretty *Pericallia Syringaria* appears in gardens, and the dwarf summer brood of *Illunaria* is on the wing.

In August *Epione apiciaria* is frequently met with, and the summer brood of *Selenia illustraria* is more plentiful than the larger specimens of May. *Crocallis elinguaris* is frequently dislodged by the beating-stick, and towards the end of the month the "Yellow Thorns" all appear in the perfect state, and continue to appear in the following month; of these *Ennomos angularia* and *Tiliaria* are the commonest; *Erosaria* and *Fuscantaria* are less frequently met with, and *Alniaria* is the sole actual rarity in the family, only about 4 British specimens of it being known.

In October and November *Himera pennaria* comes out as the sole representative of this family at that late period of the season; it is no rarity, comes freely to light, and may be found on hedges by the aid of a lanthorn. Every tyro may expect to meet with *Apiciaria*, *Cratægata*, *Maculata*, *Prunaria*, *Margaritata*, *Illunaria*, *Bidentata*, *Elinguaris*, *Tiliaria*, *Angularia* and *Pennaria*; all the others, except *Alniaria*, may be expected in a year or two; but the two local species of *Epione* must be sought for in their known habitats, unless the col-

lector is so fortunate as to discover new localities for those species.

The 13 genera may be thus tabulated :—

- A. Fore-wings entire.
- B. Hind-wings entire.
 - C. Wings pale yellow ; antennæ simple in the male.
Genus 2. RUMIA.
 - CC. Wings reddish ; antennæ pectinated in the male.
Genus 6. ELLOPIA.
- BB. Hind-wings indented. Genus 4. ANGERONA.
- AA. Fore-wings slightly indented below the tip.
 - D. Hind-wings indented in the middle.
 - E. Wings of moderate size. Genus 1. EPIONE.
 - EE. Wings ample. Genus 8. PERICALLIA.
 - DD. Hind-wings nearly entire. Genus 3. VENILIA.
 - DDD. Hind-wings angulated. Genus 5. METROCAMPA.
- AAA. Fore-wings oblong, slightly indented at anal angle.
Genus 7. EURYMENE.
- AAAA. Fore-wings nearly entire, but slightly dentate. Genera 11. CROCALLIS, and 13. HIMERA.
- AAAAA. Fore-wings angular.
 - F. Wings brown. Genus 10. ODONTOPERA.
 - FF. Wings variegated ; a transparent lunule in middle of fore-wings. Genus 9. SELENIA.
 - FFF. Wings yellow ; no transparent lunule. Genus 12. ENNOMOS.

Genus 1. EPIONE.

Imago : antennæ of the male pectinated ; wings of moderate size ; fore-wings generally indented below the tip ; hind-wings indented in the middle of hind-margin.

Larva twig-like, with no protuberances ; feeding exposed on trees, &c.

Pupa very lively, enclosed in a cocoon amongst leaves.

The three species may be thus recognized :—

A. Fore-wings whitish brown. *E. advenaria*.

AA. Fore-wings orange.

B. The second line runs into the tip. *E. apiciaria*.

BB. The second line runs into the costa. *E. vespertaria*.

E. VESPERTARIA. 1''—1'' 1'''. F.-w. orange (yellow in the female), irrorated with darker orange, and the veins distinctly darker; f. l. curved, dark grey; s. l. sinuous, terminating on the costa some distance from the apex, blackish, followed by a slender purplish band; c. s. black. VII, VIII.



Larva brownish, with a whitish blotch on the 6th seg., and yellow diamonds on the 5 following seg.; on each side of the back a fine white line to the 6th seg. (*Hub.*) On nut. VI.

Lyndhurst and York; always local.

E. APICIARIA. 1'' 1'''—1'' 3'''. F.-w. orange; f. l. sharply angulated in the middle, blackish; s. l. rather wavy, going from beyond the middle of the inner margin to the apex of wing, black, followed by a broad purplish band; c. s. black. VII and VIII e, IX.

Larva grey, with a whitish transverse band in the middle; on each side of the back a fine white line (*Treit.*) On willow, poplar and alder. V and VIII b.

Ba.!! Bi.! Brg.! Brs.! Ca.! Da.! Ex.! K. Lw.! Ly. M. Pm. Sc.!! St.! Tu.! Y.!

E. ADVENARIA. 1'' 1'''—1'' 2'''. F.-w. whitish dusted with pale brown; f. l. rather curved; s. l. slightly sinuous; both are pale brownish, and the second is frequently followed by a whitish band; c. s. brownish, indistinct. VI.

Larva brown-grey, paler beneath; on the 6th seg. are 2 long white spots; the 4 following seg. with white diamonds (*Treit.*) On bilberry. VII.

Pembury, and Portshead near Bristol; always local.

Genus 2. RUMIA.

Imago: antennæ of male simple; wings yellow, entire, with neither angles nor indentations.

Larva twig-like, with 2 additional pairs of ventral prolegs, not used in walking, hence 14 legs, with humps on the 7th and 9th segments.

Pupa enclosed in a thick cocoon.

R. CRATÆGATA (Brimstone Moth). 1" 4'''—1" 7'''. F.-w. sulphur-colour; costa spotted with dull red; f. and s. l. only indicated by very pale fuscous spots; c. s. *white edged with brownish*, with three points externally. IV e—IX (most plentiful V and VI).

Larva with 14 legs; excessively variable in colour (green, brown or marbled); a straight projection on the back of the 7th seg., and two small prominences on the 9th seg. (*Gu.*) On hawthorn, sloe, &c. VI—X.

Abundant everywhere.

Genus 3. VENILIA.

Imago: antennæ simple in the male; fore-wings slightly indented below the tip.

Larva elongate, with no humps, with distinct lines.

Pupa short, subterranean.

V. MACULATA (Speckled Yellow). 1" 1'''. F.-w. *yellow, with four greyish brown blotches* from the costa, the first almost reaching across the wing, one from the inner margin beyond the middle, and one near the hind-margin. V, VI.

Larva green; dorsal line darker, between two white lines; spiracular line white (*Gu.*) On nettle and other low plants. VIII, IX.

Ba.!! Brg. Brs.!! Da.! Ex.!! Hu. L.D.! Lw.! Ly.! N. Pm. Pl.! St.!! Tn.!! Y.



Genus 4. ANGERONA.

Imago : antennæ pectinated in the male ; wings ample ; fore-wings entire ; hind-wings slightly scalloped.

Larva twig-like, elongate, with humps on the 5th, 9th and 12th segments.

Pupa enclosed between leaves.

A. PRUNARIA (Orange). 1'' 9'''—1'' 11'''. F.-w. *orange speckled with fuscous* ; c. s. rather dark fuscous.

Variety. — F.-w. greenish grey, with a large orange central patch from the costa. VI, VII.

Larva brown or ochreous-brown, with a bifid hump on the 5th and 9th seg., a smaller bifid hump on the 12th, and two small points protruding from the anal seg. (*Hub.*) On plum and other trees. X, IV, V.

Ba.!! Brg.! Brs.! Lw.! 'Ly. Pm.! Pl.! St.!! Tn.!! Wt.! Y.!

Genus 5. METROCAMPA.

Imago : antennæ of the male pectinated ; wings ample and angulated ; fore-wings with the tip acute, and a projection in hind-margin ; hind-wings dentate, with the longest projection in the middle.

Larva with 12 legs, the additional ventral pair being used in walking ; on the sides with fleshy filaments above the legs (as in CATOCALA, see 'Manual,' vol. i. p. 315).

Pupa on the surface of the earth.

M. MARGARITATA (Light Emerald). 1'' 5'''—2''. F.-w. pale whitish green ; f. and s. l. slightly angulated near the costa whitish, the latter edged internally with darker green. VII.

Larva with 12 legs ; dull brownish green ; dorsal line black, a row of white dots on each side of it (*Hub.*) On oak, birch, beech and hornbeam. IX—V.

Ba.! Bi.! Brg.! Brs.! Ca.!! Da.! Ed.!! Ex.!! Ha.! Hu.! L.D.! Lw.! Ly.! M.! N. Pm.! Sc.! St.!! Tn.!! Wt. Y.!

Genus 6. ELLOPIA.

Imago: antennæ of the male pectinated; wings rather transparent, entire.

Larva with 12 legs, the additional ventral pair being rudimentary; not humped.

E. FASCIARIA (Barred Red). 1" 5''' — 1" 6''' . F.-w. greyish red; f. and s. l. slightly angulated near the costa, darker greyish red, the space included being redder than the rest of the wing; c. s. dark fuscous, sometimes wanting. VI e, VII.

Larva with 12 legs; reddish grey, paler on the back, with a series of heart-shaped reddish brown spots, intersected by the dorsal line (*Sepp.*) On fir (*Pinus sylvestris*). IX—IV.

Bi. ! Brg. Brs. Ct. Da. Ed. Ly. M. ! Pm. Sc. Wa. ! Y. !

Genus 7. EURYMENE.

Imago: antennæ of the male pectinated; fore-wings oblong, slightly indented at anal angle; hind-wings also slightly indented at anal angle.

Larva twig-like, humped on the 9th seg.; head rather bifid. Pupa subterranean.

E. DOLOBRARIA (Scorchwing). 1" 2''' — 1" 3''' . F.-w. whitish ochreous, with numerous slender transverse brown lines; on the inner margin near the anal angle is a conspicuous black-brown blotch; no c. s. VI.

Larva reddish brown; the 3rd seg. swollen, the 9th with a larger hump; a whitish line on each side of the back, on the 5th seg., continued of a pale grey on the 3 following seg. (*Hub.*) On oak and birch. VIII—X.

Bi. Brg. Brs. Da. Ex. Ha. ! L.D. Lw. Ly. M. Pm. Sc. St. Tn. ! Y. and Stowe Wood, Oxfordshire.

Genus 8. PERICALLIA.

Imago: antennæ pectinated in both sexes; wings ample; fore-wings slightly indented below the tip; hind-wings indented in the middle.

Larva short, thick, with two long slender protuberances on the 8th seg.

Pupa very short, largest in the middle, enclosed in a slight web attached to a branch.

P. SYRINGARIA (Lilac Beauty). 1" 5'''—1" 6'''. F.-w. yellowish tinged with reddish, towards the costa much clouded with greenish grey; f. l. angulated near the costa, pale flesh-colour; s. l. angulated near the costa, pale flesh-colour at each end, but dark fuscous in the middle; from its angle a reddish brown line goes to the middle of inner margin. VII.

Larva violet-brown or yellowish green, with a brown dorsal stripe; two small prominences on the 6th and 7th seg., and two long protuberances, curved backwards, on the 8th seg. (Hub.) On privet and lilac. IV, V.

Brg. Brs. Ca. Ex.! Ha.! Hu. K. Lw. M. N. Pm. St. Tn. Wa.! Wt. Y.

Genus 9. SELENIA.

Imago: antennæ of the male pectinated; wings ample, angular and much dentate, with a crescent-formed mark (sometimes nearly transparent) in the middle of the fore-wings.

Larva twig-like, thick, swollen behind; the third pair of true legs planted on a cushion as it were, and thence appearing longer than the others.

Pupa subterranean.

The three species may be distinguished by the form and direction of the second line of the fore-wings.

A. Second line straight, but rather oblique. *S. illunaria*.

AA. Second line straight and perpendicular. *S. lunaria*.

AAA. Second line sinuous. *S. illustraria*.

S. ILLUNARIA (Early Thorn). 1" 7'''—1" 8''' and 1" 4'''—1" 5'''. F.-w. whitish grey, more or less tinged with ochreous and dusted with fuscous; f. l. rather curved; s. l. *slightly oblique*; both are dark fuscous; between them is a distinct cen. sh., at the edge of which is placed the whitish moon-shaped c. s. III, IV and VII.

Larva ferruginous, clouded with yellow, with a paler subdorsal and spiracular line; the 8th and 9th seg. are rather humped (*Hub.*) On plum, willow, &c. VI and IX.

Common everywhere; generally abundant.

S. LUNARIA. 1" 8'''—1" 10'''. F.-w. whitish grey tinged with reddish ochreous; f. l. much curved, blackish; s. l. *almost perfectly straight*, blackish; beyond it the wing is pale whitish grey, except the reddish ochreous patch at the tip; c. s. moon-shaped, whitish, with dark edge. VI.

Larva ashy grey marbled with brown; the 3rd seg. with a dark brown hump, and the 6th and 9th seg. also humped (*Hub.*) (Freyer's fig. represents a very different larva). On oak, elm, sloe, &c. IX.

Brg. Brs. Ct. Da. L.D. Ly. M.! Pl. Pm. Sc. St.!! Tn. Y.

S. ILLUSTRARIA. 1" 8'''—1" 9''' and 1" 4'''—1" 6'''. F.-w. pale grey with a faint rosy tinge, clouded with fuscous to beyond the middle; f. l. curved; s. l. *distinctly waved*; both dark fuscous; c. s. moon-shaped, whitish, edged with dark. V and VIII.

Larva greyish brown marbled with dark brown, with bifid prominences on the 5th, 6th, 8th and 9th seg., the two latter being the largest (*Hub.*) On birch, beech, ash and oak. VI and IX.

Brg. Brs. Ex. Ha. Ly. Pl.! St.

Genus 10. ODONTOPERA.

Imago: antennæ of the male very slightly pectinated; abdomen stout; wings ample, much dentate; fore-wings with three teeth longer than the others.

Larva with 14 legs, the two additional ventral pair not used in walking, twig-like, swollen posteriorly, with no protuberances.

Pupa subterranean.

O. BIDENTATA (Scolloped Hazel). 1" 6'''—1" 10'''. F.-w. pale brown, dusted with darker; f. l. rather angulated; s. l.

slightly curved, serrated; both dark fuscous, the latter frequently followed by a dark fuscous shade; c. s. a dark fuscous ring. V.

Larva with 14 legs, brown, grey or green, with the black outlines of a series of diamonds down the back; head bifid, but rounded (*Hub.*) On oak and other trees. IX, X.

Common everywhere; generally abundant.

Genus 11. CROCALLIS.

Imago: antennæ of the male pectinated; abdomen stout; wings thick, slightly toothed.

Larva twig-like, stoutest behind. Eats other larvæ with avidity.

Pupa subterranean.

C. ELINGUARIA (Scolloped Oak). 1'' 5'''—1'' 8'''. F.-w. straw-colour; f. l. straight; s. l. rather curved, dark fuscous; these much approximate on inner margin; the space included is very pale fuscous; c. s. blackish. VII e, VIII.

Larva greyish brown marbled with whitish and violet, with variable markings; 12th seg. with a horse-shoe shaped protuberance (*Hub.*) On sloe, hawthorn, &c. IV, V.

Generally common.

Genus 12. ENNOMOS.

Imago: antennæ pectinated in the male; body rather stout; thorax downy; wings thick, dentate, each wing with a larger tooth in the middle of hind-margin.

Larva twig-like, elongate, with or without humps.

Pupa enclosed in open net-work between leaves.

The species may be thus recognised:—

A. The minor teeth of the wings conspicuous. *E. Alniaria*.

AA. The minor teeth of the wings inconspicuous.

B. The first line strongly angulated on the subcostal nervure. *E. angularia*.

BB. The first line hardly angulated on the subcostal nervure.

C. The two lines nearly parallel. *E. Tiliaria*.

CC. The two lines approach. *E. erosaria*.

CCC. The two lines meet. *E. fuscantaria*.

E. ALNIARIA. 2". F.-w. with the hind-margin much toothed, pale yellow irrorated with fuscous; f. l. not angulated; s. l. oblique, but slightly curved; both dark fuscous; no c. s. IX.

Larva smooth, brown marbled with whitish, with slight protuberance on the back of the 7th seg., on the sides of the 8th seg., on the back of the 10th, and a bifid protuberance on the 12th seg. (*Hub.*) On alder, birch, &c., &c. VI.

Has occurred at Brighton, Margate, and at the North Foreland Lighthouse.

E. TILIARIA (Canary-shouldered Thorn). 1" 6'''—1" 7'''. F.-w. deep yellow dusted with fuscous; f. l. slightly angulated near the costa; s. l. a regular curve; both these and the c. s. dark fuscous. VIII e, IX.



Larva wrinkled, brown marbled with darker brown, with humps on the 6th to 10th seg., gradually increasing in size (*Treit.*) On birch, oak, &c. VI.

Bi. ! Brg. Brs. Ca. Da. Ex. Lw. Ly. M. Pl. Sc. ! St. Wa. Y.

E. FUSCANTARIA. 1" 6'''—1" 7'''. F.-w. yellowish ochreous, posteriorly fuscous; f. l. hardly angulated at the costa; s. l. with a faint double curve meeting the first line on the inner margin; both are rather dark fuscous; c. s. pale fuscous, very indistinct. VIII e, IX.

Larva with no humps, green or yellowish green; spiracular line paler, edged with blackish; a reddish brown band on the

3rd, 6th and 9th seg., and two reddish brown spots on the anal seg. (*Gu.*) On ash and privet. VI.

Bi. Brs. Da. Ha. Ip. M. N. Pl. Y.

E. EROSARIA. 1" 6''' — 1" 7'''. F.-w. *ochreous*; f. l. slightly angulated near the costa; s. l. a faint double curve not meeting the first; both dark fuscous; *no c. s.* VIII e, IX.

Larva greyish marbled with brown, with humps on the back of the 3rd, 6th, 8th, 9th and 12th seg., and lateral protuberances on the 7th seg. (*Hub.*) On oak, birch, &c. VI.

Ba. ! Bi. Brg. Brs. Lw. Ly. M. St. Tn. Wt. Y.

E. ANGULARIA. 1" 6''' — 1" 7'''. F.-w. yellowish ochreous, more or less with a reddish tinge; f. l. *distinctly angulated* near the costa; s. l. slightly angulated; both are dark fuscous, the latter frequently followed by a fuscous shade; c. s. pale fuscous, rather indistinct. VIII, IX.

Larva smooth, elongate, grey clouded with reddish brown; 6th and 7th seg. each with one dorsal and two lateral protuberances; 9th with a large dorsal hump; 12th with two small protuberances (*Gu.*) On oak, &c. VI.

Ba. Brg. Brs. ! Ct. !! Ex. ! Ha. !! K. Lw. ! Ly. ! M. N. Pm. Pl. ! Sc. St. ! Wt. ! Y.

Genus 13. HIMERA.

Imago: antennæ of the male *plumose*; abdomen stout; thorax downy; wings ample, very slightly dentate, not angulated (narrower in the female).

Larva elongate, with no hump but on the 12th segment.

Pupa subterranean.

H. PENNARIA (Feathered Thorn). 1" 10''' — 1" 11'''. F.-w. reddish ochreous dusted with fuscous; f. l. rather curved; s. l. nearly straight, dark fuscous, the latter externally edged with paler; c. s. blackish; a white spot towards the apex of the wing. X, XI.

Larva pale grey marbled with white and blackish, forming irregularly a series of dorsal lozenges; on the back of the 12th seg. are two small red projections (*Hub.*) On oak. V.

Bi. Brg. Brs. !! Ca. Ct. !! Da. ! Ed. Ex. Ha. !! Hu. ! K. L.D. Lw. Ly. ! M. !! N. Pl. !! Sc. ! St. ! Y.

Family III. AMPHIDASIDÆ.

Imago: antennæ of the male plumose or pectinated, of the female always simple; thorax generally woolly; abdomen almost always stout; wings of the male ample, of the female wanting, rudimentary, or as well developed as in the other six.

Larva never with more than 10 legs; long, smooth, twig-like, not attenuated in front.

Pupa subterranean, very pointed behind.

This family furnishes us with those of the GEOMETRINA which approach most nearly to the BOMBYCINA. The woolly thorax, large body, highly pectinated or plumose antennæ, all seem to confirm their identity with the *Bombyces*; but the 10-legged larvæ show us that we have here not *Bombyces*, but the representatives of the *Bombyces* among the *Geometra*. The family contains but six species, divided into four genera. All the species appear early in the season, only one, *Betularia*, being found as late as June. *Pilosaria* often appears at the commencement of the new year, but is most frequent in February, at the end of which month the scarcer and more local *Hispidaria* appears. In March the "Oak Beauty," *Prodro-maria*, emerges from the pupa state, and, though deemed a good prize by the young collector, is often taken at rest on the trunks of oaks (especially after 3 P.M.) The following month the cockney *Hirtaria* comes out by hundreds, and the local *Zonaria* is nearly equally plentiful on the sand hills of the coast: hitherto this has been found in but few localities; but probably, if all our sand hills from Deal to Braunton Burrows were well searched, this insect would be found to be more

generally distributed than we at present deem it. Towards the end of May the common *Betularia* appears, and when its flight is over the family has gone by for the year. With the exception of the scarce *Hispidaria* and the local *Zonaria*, the young collector should take all the others his first season.

The four genera may be thus tabulated :—

Males.

- A. Antennæ pectinated, not plumose. Genus 4. AMPHIDASIS.
- AA. Antennæ plumose.
- B. Fore-wings oblong. Genus 2. NYSSIA.
- BB. Fore-wings ample.
- C. Abdomen rather slender. Genus 1. PHIGALIA.
- CC. Abdomen stout. Genus 3. BISTON.

Females.

- D. Entirely apterous. Genus 1. PHIGALIA.
- DD. With minute rudimentary wings. Genus 2. NYSSIA.
- DDD. With well-developed wings.
- E. Wings narrower than in male. Genus 3. BISTON.
- EE. Wings alike in both sexes. Genus 4. AMPHIDASIS.

Genus 1. PHIGALIA.

Imago : antennæ of the male plumose ; thorax downy ; abdomen rather slender ; wings of the male ample ; female entirely apterous.

Larva thickened in front, bristly.

Pupa subterranean.

P. PILOSARIA. 1" 6'''—1" 11'''. F.w. pale grey with a faint *greenish* tinge, with four indistinct wavy transverse lines ; the two first before the middle are most conspicuous ; c. s. fuscous, indistinct. I, II, III.

Larva greyish brown clouded with reddish, with small protuberances on the back of the 5th, 6th, 7th and 12th seg. ; hairs bristly (*Gu.*) On oak, &c. V, VI.

Bi.! Brg.! Brs.! Da.! Ed.! Ex. Ha.! Hu.! K. L.D.!
Lw. Ly. M.!! N. Sc.!! St.! Wt. Y.!

Genus 2. NYSSIA.

Imago: antennæ of the male plumose; thorax downy; abdomen rather stout; wings of the male oblong, rather transparent; female with very short rudimentary wings, hardly perceptible.

Larva elongate, cylindrical, not humped; feeding on trees or low plants.

Pupa subterranean.

Independently of their different size, our two species may be readily distinguished by the difference in the ground-colour.

N. ZONARIA. 1"—1" 1". F.-w. *whitish*, with the veins dark fuscous; an oblique, dark fuscous, rather irregular band from the inner margin near the base, to the costa near the apex; hind-margin pale fuscous, preceded by a darker band; abdomen of both sexes with pale rings. IV.

Larva with no protuberance, green marbled with white; spiracular line broad, pale yellow, edged above with brown (*Hub.*) On yarrow. V, VI.

Birkenhead and New Brighton, Cheshire.

N. HISPIDARIA. 1" 3"—1" 4". F.-w. *pale grey* with more or less of an ochreous tinge, sometimes *clouded with dark fuscous*; f. and s. l. slightly curved, blackish, the latter followed by a paler shade; no c. s. The female has the tibiæ hairy, a striking character, by which it may be at once distinguished from *P. pilosaria*. II, III.

Larva brown-grey, more or less variegated with delicate orange markings, with a few orange warty protuberances (*Hawley* in *Int.* iii. 154).

Hu.! Ly. M.! Sc.

It should be observed that *Nyssia pomonaria*, a species very probable to occur here, is figured by Albin (*Pl.* 97, f. a—d), who found the larva on hazel, June 1st. Unfortunately he does not give the locality.

Genus 3. BISTON.

Imago: antennæ of the male plumose; thorax woolly; abdomen short and conical in the male; wings of the male ample, of the female well-developed, but rather narrower and more transparent.

Larva smooth, with two small humps on the 12th seg.

Pupa rather short, subterranean.

B. HIRTARIA. 1" 9'''—1" 10'''. F.w. greyish *ochreous* dusted with fuscous, with four wavy, irregular, transverse, black lines, the 1st, 3rd and 4th being geminated; c. s. dark fuscous, sometimes wanting. IV e, V b.

Larva brown; spiracular line interrupted, pale yellow; the subdorsal line represented by yellow spots on the 6th to 10th seg.; front of 2nd seg. pale yellow. On elm, &c. VII, VIII.

Ca. !! Ex. K. ! Sc. St. ! Most abundant in the squares of London.

Genus 4. AMPHIDASIS.

Imago: antennæ of the male pectinated; thorax rather woolly; abdomen conical, short in the male, longer in the female; wings ample, alike in both sexes; fore-wings triangular.

Larva long, swollen at each end; the head often bifid.

Pupa subterranean.

The two handsome species may be readily distinguished, thus:—

Fore-wings with two broad red-brown bands; antennæ of the male pectinated to the tip. *A. prodromaria*.

Fore-wings with no red-brown bands; antennæ of the male pectinated to beyond the middle; the tip filiform. *A. Betularia*.

A. PRODROMARIA (Oak Beauty). 1" 9''' — 2''. F.w. whitish dusted with black; f. and s. l. much angulated, black, the former preceded, the latter followed, by a *broad reddish brown band*; c. s. blackish. III, IV b.

Larva brown marbled with white, with two small reddish protuberances on 8th, 9th and 12th seg., and a small projec-



tion from the belly on the 7th, 8th and 9th seg.; head bifid, but not conspicuously so (*Hub.*) On oak, birch, &c. VI—VIII.

Ba.! Brg. Brs. Ca. Da. Ex. Ha.! Hu. L.D. Lw. Ly. M.!! N. Pl.! Sc. St. Y.

A. BETULARIA (Peppered). 1" 7'''—1" 10'''. F.-w. white speckled all over with black, the black transverse lines rather indistinct; c. s. black. V, VI.

Larva green, grey or brown, with two whitish protuberances on the 9th and 12th seg. (none on the 8th, and no ventral protuberances); head strikingly bifid (*Hub.*) On birch, &c., &c. VIII, IX.

Common everywhere.

Family IV. BOARMIDÆ.

Imago: antennæ of the male generally pectinated or ciliated, but never plumose; abdomen of the male long and often slender; wings generally ample, often dentate, but never angulated, often with uniform markings on both wings.

Larva with 10 legs, with no humps but on the 6th and 12th seg.; rarely green.

Pupa generally subterranean, sometimes amongst leaves.

With the exception of "the Waved Umbre" (*Hemerophila abruptaria*) none of the species of this family are brightly

coloured, grey, greenish grey and ochreous grey being the prevailing colours; yet, if the collector is not disheartened by the extreme similarity of many of the species, and what Guenée terms their "confused markings," there is something rather elegant in their shading. The perfect insects are fond of sitting on palings or trunks of trees, and display all the wings nearly as much as when they are set out in our collections. The most generally distributed of this family are *Hemerophila abruptaria*, *Cleora Lichenaria*, *Boarmia repandaria* and *rhomboidaria*, and *Tephrosia Crepuscularia* and *punctulata*; all the other species are more or less local, and some are of extreme rarity, *Mniophila cineraria* having a place in our British list solely from a specimen in the collection of the British Museum, ticketed by Dr. Leach as having been taken by him at Tenby; and of *Dasydia Torvaria* we have no specimen extant, but only a tradition that one was taken at Ballymena, in Ireland.

The first of this family that greets us in the new year is *Tephrosia Laricaria*, which may be seen as early as the end of March; the following month it is joined by *Crepuscularia* and *H. abruptaria*. In May the rare *B. cinctaria*, the local *T. consonaria*, and the more common *punctulata* appear. In June the rare *C. viduaria* and the abundant *B. repandaria* and *rhomboidaria* appear, as also the local and scarcer *Roboraria*, *Consortaria* and *Extersuria*. In July several of the June species are still on the wing, and, in addition to the wood-frequenting species, *C. glabraria*, *Lichenaria*, and *B. Abietaria*, the heath- or downs-loving *Gnophos obscurata* and *pullata* appear, and the mountain species, *Dasydia obfuscata* and *Psodos trepidaria*, are to be obtained by those who visit their haunts. *Obscurata*, *Pullata* and *Obfuscata* continue to occur

during August, and then the family is unrepresented in the perfect state till the following spring.

This family contains eight genera, which may be thus roughly tabulated:—

- A. Antennæ of the male pectinated.
 - B. Wings dentate, ample.
 - C. Wings ochreous and black. Genus 1. *HEMEROPHILA*.
 - CC. Wings cloudy grey. Genus 3. *BOARMIA*.
 - BB. Wings entire, of moderate size.
 - D. Fore-wings oblong. Genus 8. *MNIOPHILA*.
 - DD. Fore-wings more rounded. Genus 2. *CLEORA*.
- AA. Antennæ of the male not pectinated.
 - E. Wings dentate.
 - F. An ocellus in each wing. Genus 5. *GNOPHOS*.
 - FF. Wings without ocelli. Genus 4. *TEPHROSIA*.
 - EE. Wings entire, ample. Genus 6. *DASYDIA*. (In one species, *Torvaria*, the antennæ are pectinated).
 - EEE. Wings entire, of small size; palpi very hairy. Genus 7. *PSODOS*.

Genus 1. *HEMEROPHILA*.

Imago: antennæ of the male pectinated to near the tip: wings oblong, concolorous, dentate.

Larva not humped; head subquadrate; feeding exposed on the leaves of shrubs.

Pupa in an angle of the stem, &c., covered with a piece of very tough silk.

H. *ABRUPTARIA* (Waved Umbre). 1'' 5'''—1'' 7''' . F.-w. ochreous, with brown or blackish markings; f. and s. l. blackish, rather wavy, obliquely situated, starting from the inner margin and disappearing before they reach the costa; s. l. followed by a broad dark band; c. s. black, very near the first line. IV e, V, VI b.

Larva blackish brown, with a whitish band in front of 2nd seg. (*Wallace, verb. comm.*) On lilac. VII.



Bi. Brg.! Brs.!! Ca. Da. Ex.! K. L.D. Lw.! N. Sc.
St.!! Tn.! Y.

Genus 2. CLEORA.

Imago: antennæ of the male pectinated to the tip (in *Lichenaria*; *Viduarina* and *Glabraria* have the tip filiform); wings thick, entire, with long spotted cilia.

Larva with numerous dorsal humps; feeding on lichens.

Pupa in a slight cocoon amongst bark or moss.

The three species may be thus recognised:—

A. Ground-colour of fore-wings white; no central shade. *C. glabraria*.

AA. Ground-colour of fore-wings whitish.

B. Fore-wings with a distinct blackish central shade; no greenish tinge. *C. viduarina*.

BB. Fore-wings tinged with greenish; second line very distinct. *C. Lichenaria*.

C. VIDUARIA. 1" 3"—1" 4". F.-w. white more or less clouded with grey; f. l. curved; s. l. angulated and indented, but rather indistinct; both are black; cen. sh. blackish. VI.

LARVA HARDLY KNOWN.

Brighton and Lyndhurst.

C. GLABRARIA. 1" 1"—1" 2". F.-w. white dusted with blackish; f. l. slightly angulated, rather thick, black; s. l.

slightly angulated, but not indented, blackish, followed by a blackish shade before the hind-margin; c. s. black, connected with the costa by a blackish blotch. VII e.

Larva greenish white, with a black spot on the back of each seg. (*Zell.*) On lichens on fir trees. V, VII.

Lyndhurst, Lake District (common, but local), and Clovelly.

C. LICHENARIA. 1'' 1''' — 1'' 3''' . F.-w. whitish much dusted with greenish grey; f. l. black, slightly curved; s. l. angulated and much indented, black; c. s. blackish. VII.

Larva pale green, almost whitish green; two small humps on each of the 5th to 12th seg., those on the 5th and 9th being the largest; between the two humps is frequently a black spot; spiracular line blackish. On lichen, elms, poplars, &c. IX—V.

Ba. Bi. Brg.! Brs. Ca.!! Ct.!! Da. Ex.! Ha.!! K.! L.D. Lw.! Ly. M. Pm.! Sc.! St.! Tn.! Wt.! Y.!

Genus 3. BOARMIA.

Imago: antennæ of the male pectinated, the tip generally simple; abdomen slender; wings ample, cloudy grey, slightly dentate.

Larva twig-like, elongate, with small humps and lateral projections; living on trees.

Pupa subterranean.

The species of this genus have a strong family likeness, and are not easily distinguished by the uninitiated. The following is a tabular arrangement of the six species:—

- A. Base of the abdomen with a white belt. *B. cinctaria*.
- AA. Base of the abdomen with no white belt.
 - B. H.-w. with a central ocellated spot. *B. consortaria*.
 - BB. H.-w. with no central ocellated spot.
 - C. Wings whitish grey. *B. Roboraria*.
 - CC. Wings grey.
 - D. Subt. l. sinuous and much indented. *B. repandata*.
 - DD. Subt. l. sinuous, but not much indented.
 - E. H.-w. with no distinct lines. *B. Abietaria*.
 - EE. H.-w. with 3 distinct lines. *B. rhomboidaria*.

B. REPANDATA (Mottled Beauty). 1'' 8'''—1'' 9'''. F.-w. pale grey dusted with brownish; f. l. curved, blackish; s. l. much angulated and slightly indented, blackish, edged externally with ochreous; the pale subt. l. much indented below the middle; c. s. blackish, in a pale brown costal blotch. VI, VII.

Larva ochreous-grey spotted with black; the dorsal and spiracular lines whitish ochreous; the black spots form a series of indistinct dorsal lozenges (*Hub.*) On spindle, bramble, birch, sloe, &c. IV, V.

Common everywhere: often abundant.

B. RHOMBOIDARIA (Willow Beauty). 1'' 6'''—1'' 9'''. F.-w. brownish grey slightly dusted with darker; f. l. slightly angulated, blackish; s. l. slightly angulated near the costa, blackish, sometimes uniting with an indistinct central line near the inner margin; the pale subt. l. almost parallel to the hind-margin; c. s. blackish. VI, VII.

Larva yellowish or brownish grey, sometimes with traces of darker dorsal lozenges; 6th seg. with a slight lateral protuberance below the pale greyish yellow spiracular line (*Gu.*) On oak, plum, &c. IX, X.

Common everywhere; generally abundant: scarce in Scotland, occurring at the Cumbraes.

B. ABIETARIA (Satin Beauty). 1'' 7'''—2''. F.-w. greyish black, glossy; f. l. curved; s. l. angulated and indented, black; c. s. black. [Female paler and slightly clouded with pale orange]. VII b.

Larva reddish grey, often paler or yellowish on the back; subdorsal lines black, interrupted; spiracular line yellowish (*Freyer*). On fir. V, VI.

Ct.! Ly. Pm. Wa. and near Dumbarton.

B. CINCTARIA. 1'' 3'''—1'' 5'''. F.-w. whitish grey; f. l. curved; s. l. curved and indented, both blackish; c. s. whitish edged with fuscous; subt. l. whitish, serrated. V, VI.

Larva dark brown, with a row of whitish lozenges on the back from the 5th to 8th seg., intersected by the brown dorsal line: subdorsal line black, interrupted; a slight lateral projection on the 5th seg.; head bifid (*Treitschke*). On heath. IX.

Brighton and Lyndhurst, and near Dalmally.

B. ROBORARIA (Great Oak Beauty). 2'' 1'''—2'' 3'''. F.-w. whitish grey dusted with blackish; f. l. only indicated, blackish, curved; s. l. rather indistinct, slightly curved, serrated, blackish; on the inner margin it almost meets a blackish central line; beyond it is a pale brownish band, and before the hind-margin a geminated blackish line. VI e, VII.

Larva greyish brown; spiracular line whitish; subdorsal line spotted with black and white; lateral projections on the 6th seg., and a projection beneath the 7th seg. (*Hub.*) On oak. IX—V.

Lw. Ly. *M.*! Tn.! and West Wickham.

B. CONSORTARIA. 1'' 9'''—2''. F.-w. whitish grey dusted with blackish; f. l. rather angulated, brownish; s. l. slightly angulated near the costa, much serrated, uniting with a central brownish line below the middle of the wing; it is followed by a pale brownish band; towards the hind-margin are two grey serrated lines; c. s. of h.-w. ocellated. VI, VII.

Larva reddish grey or greenish; dorsal line interrupted darker; spiracular line dark grey; 2 humps on the back of the 6th seg., and 2 black points on the 12th seg. (*Gu.*) On oak. VIII, IX.

Brg. Ly. Pm.

Genus 4. TEPHROSIA.

Imago: antennæ of the male ciliated; abdomen slender; wings ample, slender, dentate.

Larva elongate, not humped, with numerous longitudinal lines.

Pupa amongst moss.

The three first species are very similar, but may be thus tabulated:—

A. F.-w. of moderate size, with no conspicuous pale blotch in sub. l.

B. S. l. parallel to hind-margin. *T. consonaria*.

BB. S. l. approaches the base on the inner margin.

C. Ground-colour of f.-w. white. *T. crepuscularia*.

CC. Ground-colour of f.-w. grey. *T. Laricaria*.

AA. F.-w. of moderate size; a conspicuous pale blotch in middle of subt. l. *T. extersaria*.

AAA. F.-w. of smaller size, with distinct black spots on the costa at commencement of f. l., cen. sh. and s. l. *T. punctulata*.

T. CONSONARIA. 1" 6'''—1" 7'''. F.-w. whitish dusted with pale brownish; f. l. slightly curved, geminated, brownish; s. l. slightly curved, blackish (ending *beyond* the middle of inner margin); midway between them is an indistinct pale brownish central line. V, VI.

Larva reddish grey, with several longitudinal black lines; 2 small projections on 12th seg. (*Hub.*) On beech. IX.

Ba. Brg. Dursley! Ha.!! Ly. Pm. St.! Wa.! Wt.

T. CREPUSCULARIA (Small Engrailed). 1" 5'''—1" 8'''. F.-w. white tinged with ochreous and dusted with brownish; f. l. only indicated by 3 black dots; s. l. slightly curved, serrated, black (terminating *before* the middle of inner margin), followed by a similar pale brownish line. IV, V b.



Larva reddish mixed with black, palest at the sides and on the back of the hind-segments; subdorsal line black, and a transverse black line on the 6th and 7th seg. On willow, poplar, elm, alder, &c. VIII, IX.

Brg.! Brs.! Da. Ha.!! L.D.! Lw.! Ly. M.!! N. Pm. Pl. Sc.! St.! Tn. W.! Y.

T. LARICARIA (Engrailed). 1" 4'''—1" 7'''. F.-w. grey with more or less of a brownish tinge; f. l. slightly angulated, blackish, preceded by a brownish band; s. l. slightly curved,

slightly serrated, followed by a brownish band ; between these is a rather indistinct brownish central line. III e—V b.

LARVA UNDESCRIBED. On larch. VIII.

Brg. Brs. Ly. M. Pm. Wt.

T. EXTERSARIA. 1" 4'''—1" 5''' . F.-w. whitish much speckled with brown ; a whitish blotch at the lower end of the s. l., and a smaller whitish blotch beyond the middle of the subt. l. ; f. l., s. l. and c. l. blackish, the latter curved and preceded by the c. s. VI.

Larva pale grey clouded with reddish brown (*Crewe*, Int. iii. 139). On birch. IX.

Brg. Brs. Lw. Ly. N. Pm. St. Wt. and Stowe Wood, Oxfordshire.

T. PUNCTULATA 1" 2''' . F.-w. pale grey dusted with dark grey ; f. l., cen. sh. and s. l. blackish, thickest and most distinct towards the costa. V, VI b.

Larva reddish, spotted with white on the back of seg. 2 to 4, and with whitish dorsal blotches on the following segments ; no projections (*Hub.*) On birch and alder. VI.

Brg.! Brs.!! L.D.! Lw.! Ly. M.!! N. Pm.! Pl. Sc. Wt.! Y.!

Genus V. GNOPHOS.

Imago: antennæ of the male simple, slightly thickened ; abdomen slender ; wings ample, shining, concolorous, dentate, grey dusted with darker.

Larva short, thickened in front, with two small humps on 12th seg. ; feeding on low plants, and concealed by day.

Pupa subterranean, amongst leaves.

We have two species, and, though Guenée is of opinion they are not truly distinct, they are readily recognised by the respective *black* and *grey* colour of the wings.

G. OBSCURATA (Dark Annulet). 1" 4'''—1" 6''' . F.-w. blackish ; f. l. slightly curved, black ; s. l. curved, much serrated, black ; c. s. black, with a paler centre. VII, VIII.

Larva dull grey ; dorsal line whitish at the front edge of

each seg., bordered with dark grey; spots whitish, the 2 on the 12th seg. rather prominent (*Gu.*) On grasses and *Helianthemum vulgare* (*Logan*). (Concealed by day amongst stones). IV, V.

Ba.! Bi.! Ed. Ly.!! Pl.! Farnham and New Forest.

G. PULLATA (Brown Annulet). 1'' 2''' — 1'' 6''' . F.w. whitish grey or pale grey; f. l. nearly straight; s. l. slightly curved, both much serrated, dark grey; c. s. dark grey, with a whitish centre. VII, VIII.

LARVA HARDLY KNOWN. On *Poterium Sanguisorba* (at roots of grass). IV.

Brg. Brs.!! Ex.! L.D. Lw.!! Pl. Sc.! Bath, Portland, and near Matlock.

Genus 6. DASYDIA.

Imago: antennæ of the male pectinated or simple and slightly thickened; abdomen slender, in the female rather stout; wings ample, shiny, entire or slightly dentate; costa of fore-wings concave.

LARVA LITTLE KNOWN.

D. Torvaria, which has only once occurred in Ireland, may be readily known by the whitish yellow submarginal band on the under side of each wing, and by the pectinated antennæ of the male.

D. OBFUSCARIA. 1'' 4''' — 1'' 9''' . F.w. grey, sometimes with a greenish tinge; f. l. slightly angulated, dark grey; s. l. slightly angulated, serrated, dark grey; c. s. dark grey, with a paler centre. VII, VIII.

Larva violet-grey; spiracular line white; an oblique dark grey streak on the side of each seg.; 2 small humps on the 12th seg. (*Gu.*) On *Genista*, vetch, &c. V.?

Ardrossan, Arran and Rannoch.

D. TORVARIA. 1'' 3''' — 1'' 5''' . F.w. dark grey-brown; f. l. sinuous, black; s. l. curved and indented, black, followed by a pale brown band (which on the *under side* is conspicuously straw-colour); c. s. black. VII, VIII.

LARVA UNKNOWN.

A specimen was taken, many years ago, at Ballymena, in Ireland, by Mr. Templeton.

Genus 7. Psodos.

Imago: antennæ of the male simple, not ciliated; palpi and thorax remarkably hairy; wings of small size, oblong; flight diurnal.

LARVA ILL. KNOWN.

We have but one species, common to Scotland and Switzerland; others equally common in Switzerland have not occurred here.

P. TREPIDARIA. 10"—1". F.-w. shining dark grey; f. and s. l. serrated, blackish, approximating on the inner margin; the space included darker than the rest of the wing; c. s. black. VII.

LARVA UNKNOWN.

Common on mountains near Rannoch, in the North of Perthshire.



Genus 8. MNIOPHILA.

Imago: antennæ of the male pectinated; wings entire; fore-wings oblong; hind-wings rounded, with few markings: flight nocturnal.

Larva short, rough, flattened beneath; feeding on lichens.

Pupa in a web amongst lichen.

M. CINERARIA. 11". F.-w. grey; f. l. angulated; s. l. indented and rather indistinct, both dark grey; cen. sh. grey, with a darker c. s. VII.

Larva dull grey, greenish or whitish, with a paler line on the back, swelling into a lozenge on each seg., bisected by the dorsal line of the ground-colour, and bordered by the blackish subdorsal line (*Gu.*) On lichen on walls (generally on those which face the North). This larva is rather gregarious, and is

found along with that of *Bryophila perla*, but does not conceal itself in the chinks of the wall. V, VI.

Once at Tenby, South Wales.

Family V. BOLETOBIDÆ.

This contains but a single European species, which is very rare in this country, and is apparently most partial to the metropolis, Blackfriars Bridge, Fleet Street, and a coal-cellar at Chelsea being the only recorded localities for it.

Genus 1. BOLETOBIA.

Imago : antennæ of the male pectinated ; wings ample, concolorous, slightly dentate.

Larva not humped, but the spots warty and bearing bristles ; feeding on lichens and Fungi.

Pupa subterranean.

B. FULIGINARIA. 1'' — 1'' 1'''. F.-w. blackish ; f. l. curved ; s. l. curved and indented, both yellowish, the latter preceded by a whitish yellow blotch on the inner margin ; subt. l. indented, yellowish ; c. s. black. VI.

Larva dull black, with the spots reddish (*Gu.*) On Fungi on rotten wood. VII.

Family VI. GEOMETRIDÆ.

Imago : the antennæ of the male often pectinated, the tip generally simple ; abdomen sometimes crested : wings green, generally entire, rounded or angular, alike in both sexes.

Larva stiff, often rough, rather elongate ; head generally bifid, and the 2nd and anal segments frequently with two points.

Pupa green or grey, enclosed in a web amongst leaves.

This family is of small extent, and is only represented here by eight species, all of which are more or less of a green

colour. They are all summer insects, none appearing before May, at the end of which month *Lactearia* is generally abundant; and *Viridata* is not uncommon at its favourite localities. Both these species continue to occur during the following month, and *Thymiaria* makes its *début* in June, being both common and generally distributed. In July *Cytisaria* is on the wing on our heaths and commons; *Papilionaria* in woods and lanes; and the pretty, though scarce, pink-spotted *Bajularia* in oak woods. *Vernaria* is not rare on the chalk, where its food-plant, *Clematis Vitalba*, grows; but *Smaragdaria* is only to be found by a favoured few, in its haunts on the Essex coast. In August none but a few stragglers of the species of the preceding month are to be seen.

The six genera, amongst which our eight species are divided, may be thus tabulated:—

A. Antennæ of the male not pectinated.

B. Fringes spotted. Genus 6. HEMITHEA.

BB. Fringes unspotted. Genus 3. NEMORIA.

AA. Antennæ of the male pectinated.

C. Fringes spotted. Genus 5. PHORODESMA.

CC. Fringes unspotted.

D. Hind-wings rather angular. Genus 4. IODIS.

DD. Hind-wings rounded.

E. Abdomen crested. Genus 1. PSEUDOTERPNA.

EE. Abdomen smooth. Genus 2. GEOMETRA.

Beginners should be careful not to make the natural mistake of hunting for *Metrocampa margaritata* (the Light Emerald) in this family. See *ante*, p. 10.

Genus 1. PSEUDOTERPNA.

Imago: antennæ of the male slightly pectinated; abdomen crested, in both sexes, on the 3rd and 4th segments; wings thick, entire, of moderate size.

Larva very rigid, with two points on the 2nd and anal segments; head bifid.

Pupa green, enclosed in a web amongst leaves.

P. CYTISARIA (Grass Emerald). 1" 3''' — 1" 4'''. F.-w. greenish grey; f. l. nearly straight; s. l. angulated; both are much serrated and dark greenish grey; subt. l. indistinct, whitish; c. s. rather indistinct, dark greenish grey. VII.

Larva dark green, with darker dorsal and paler subdorsal line; spiracular line pinkish white, a branch from it running down the 3rd pair of legs; head bifid; front edge of 2nd seg. bifid, the tips dark red. On broom and *Genista anglica*. VI.

Ba. ! Bi. ! Brg. Brs. ! Ca. ! Da. Ex. ! Ip. ! K. L.D. Ly. ! M. Pm. ! Wt. ! Y. ! Luss and Ayrshire.

Genus 2. GEOMETRA.

Imago: antennæ of the male pectinated; abdomen smooth in both sexes; wings ample or of moderate size; hind-wings sometimes (as in *Papilionaria*) dentate.

Larva rather short, downy, with several dorsal humps.

Pupa enclosed in a transparent cocoon amongst moss.

Independently of the difference in size of the species, and of the other characters, the central spot is dark green in *Papilionaria* and white in *Smaragdaria*.

G. SMARAGDARIA (Essex Emerald). 1" 4'''. F.-w. green; f. and s. l. sinuous, whitish; c. s. white, conspicuous; edge of costa ochreous. VII.

Larva greyish brown, with humps on the 5th to 9th seg. (*Freyer*). "As soon as it leaves the egg, it loads its body with finely bitten stems of plants, scales of flowers, hard dry seed-capsules, and other small vegetable fragments, which it binds together strongly, and carries about with it (*Koch*)." V, VI b.

Rare. Southend, Southchurch, St. Osyth; all on the Essex coast.

G. PAPILIONARIA (Large Emerald). 1" 11''' — 2" 4'''. F.-w. dull green; f. l. wavy, rather indistinct, whitish; s. l. curved, serrated, white, indistinct towards the costa; it is followed by a fainter row of whitish dots; c. s. a dark green line. VII.

Larva green, with humps on the 2nd, 6th, 7th, 8th and 9th seg.; the humps tipped with red, and a red dorsal line on the 10th to 12th seg.; anal seg. reddish; spiracular line yellowish (*Hub.*) On birch, nut, beech, &c. V, VI, and VIII, IX.

Ba. Brg. Brs. ! Ca. Ex. Hu. L.D. Lw. Ly. M. N. Pm. Pl. Sc. St. Tn. Wt. Y. Dumbartonshire and Renfrewshire.

Genus 3. NEMORIA.

Imago: antennæ of the male ciliated; abdomen smooth; wings entire, of small size; the hind-wings slightly angulated.

Larva long and slender, with two points on the 2nd segment, and the head bifid.

Pupa between leaves.

N. VIRIDATA. 10'''—1''. F.-w. green, sometimes more or less yellowish green; f. l. curved, rather indistinct, whitish; s. l. nearly straight, almost white; fringes whitish, unspotted. V, VI.

Larva flesh-coloured, with darker dorsal line; head bifid, and front edge of 2nd seg. bifid (*Bork.*) On bramble and hawthorn. IX.

Ba. ! L.D. ! Ly.; near Lancaster.

Genus 4. IODIS.

Imago: antennæ of the male pectinated, the tip filiform; abdomen smooth; wings entire, silky and slender; the hind-wings slightly angulated.

Larva stiff, elongate; 2nd and anal segments with two points; head bifid.

Pupa in a cocoon amongst leaves.

The two species are readily distinguished by their size and difference of intensity of colour. The green colour of *Lactearia* is so fugitive that the slightest application of acid or moisture instantly bleaches the insect.

I. VERNARIA. 1" 4'''—1" 6'''. F.-w. rather bright pale green; f. l. curved, rather indistinct, whitish; s. l. nearly straight, with a slight angle at the costa, white. VII.

Larva green, with white subdorsal and spiracular lines ; head bifid, the points reddish (*Hub.*) On *Clematis*. IX.

Brg. Brs. ! Ca. Lw. N. St. Wa. Wt.

I. LACTEARIA. 11'''—1''. F.-w. very delicate greenish white ; f. and s. l. very indistinct, whitish, the space included hardly perceptibly darker ; fringes whitish, unspotted. V e, VI, VII b.

Larva long, slender, yellowish green, with a rusty dorsal band, interrupted between each seg. ; head bifid, reddish brown (*Hub.*) On birch. VIII, IX.

Ba. !! Bi. !! Brg. !! Brs. ! Ca. ! Ct. !! Da. ! Ex. ! Ha. !! Hu. !! K. ! Lw. ! Ly. ! M. ! N. Pl. ! Sc. !! St. !! Tn. !! Wt. ! Y. ! and near Glasgow.

Genus 5. PHORODESMA.

Imago : antennæ of the male pectinated, the tip filiform ; abdomen smooth ; wings entire, rounded, with spotted fringes.

Larva short, thick, with head bifid ; living in a case formed of bits of leaves, &c.

Pupa in a slight web, spun amongst leaves.

P. BAJULARIA (Blotched Emerald). 1'' 2'''—1'' 3'''. F.-w. green ; f. l. wavy, whitish ; s. l. very slender, wavy, whitish, rather indistinct, and terminating in a whitish red-centred blotch at the anal angle. VII.

Larva pale brown, with paler humps on the 5th to 9th seg. ; head dull red ; covers itself with fragments of leaves, lichen, &c. (*Hub.*) On oak. V.

Brg. Brs. Ly. Pm. St. Tn. Wt. Y.

Genus 6. HEMITHEA.

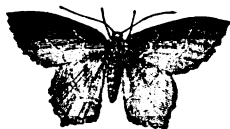
Imago : antennæ of the male ciliated ; abdomen slightly crested ; wings entire, with spotted fringes ; the hind-wings angular.

Larva long, rough ; the head bifid.

Pupa in a cocoon amongst leaves.

H. THYMIARIA. 1'' 1'''—1'' 3'''. F.-w. green, generally

rather dull; f. l. angulated; s. l. curved and sinuous; both are whitish, and the included space rather darker; fringes pale yellowish spotted with dull red. VI, VII.



Larva yellowish green; the bifid head and 3 following seg. brownish; a black spot on the back of the 5th to 12th seg. (*Hub.*) On oak and whitethorn. V.

Ba.! Bi. Brg.! Brs.! Ca.!! Ct.!! Ex.! Ha!! K.!! L.D.! Lw.! Ly.! M.! N. Pm.! Pl.! St.!! Wt.! Y.!

Family VII. EPHYRIDÆ.

This family contains but a single genus, which is most remarkable in the pupa state, many of the pupæ in form and position reminding one of butterfly pupæ in miniature.

Only one of the family is rare (*Orbicularia*), but none of the species appear to be generally abundant, though *Pendularia* is common in several localities amongst birch, and *Trilineararia* amongst beech. *Porata*, *Punctaria* and *Omicronaria* are sufficiently common to allow of every beginner meeting with them in his first or second year.

Genus 1. EPHYRA.

Imago: antennæ of the male pectinated, the tip filiform; abdomen rather depressed; wings entire, of small size; the hind-wings with a slight angle in the middle, generally with an ocellated central spot.

Larva elongate, with no humps; head slightly bifid.

Pupa truncate in front, attached, in exposed situations, by a silken thread at the tail, and a girdle round the body.

The six British species may be thus recognised:—

- A. A distinct central ocellus on each wing.
- B. A broad blackish band beyond the middle. *E. omicronaria*.
- BB. No broad blackish band beyond the middle.
- C. Wings reddish ochreous. *E. porata*.
- CC. Wings whitish grey. *E. pendularia*.
- CCC. Wings grey dusted with reddish grey. *E. orbicularia*.
- AA. A small indistinct ocellus on each wing. *E. trilinearia*.
- AAA. No ocelli. *E. punctaria*.

E. PORATA. 1" 1'" — 1" 2'". F.-w. reddish ochreous dusted with dark grey; f. l. slightly curved; s. l. slightly sinuous, both indicated only by dark grey dots; c. s. a black ring with a white centre; beyond it is a pale grey cen. sh. V and VIII.

Larva green or flesh-colour; the head and anal seg. red (*Gu.* and *Albin*). On oak. VI, IX.

Ba. Brg.! Brs. Ex.! Ip. Lw. M. Pm.! Tn.!

E. PUNCTARIA. 1" 1'" — 1" 2'". F.-w. pale greyish ochreous, with slight reddish tinge, dusted with blackish; f. l. rather curved; s. l. slightly sinuous, both consisting only of blackish dots; between is a rather distinct greyish brown cen. l.; no c. s. V and VIII.

Larva green or tawny, with oblique yellow transverse bands (*Sepp.*) On oak. VI and IX.

Bi. Brg.! Brs. Ca. L.D. Lw.! Ly. M.! N. Pm.! St. Tn.! Wt.! Y.!

E. TRILINEARIA. 1" — 1" 2'". F.-w. reddish ochreous; f. l. rather curved; s. l. slightly curved, both pale grey with darker dots; between them nearer the s. l. is a thick dark grey cen. l.; c. s. indistinct, white. V and VIII.

Larva reddish brown, with yellow markings (*Crewe*, Int. iii. 139). On beech. VI? and IX.

Brg. Ha.!! Lw. Ly.! M. N. Pm. Sc. and Dursley.

E. OMICRONARIA. 10'''—1''. F.-w. whitish straw-colour; f. l. much angulated, dark grey; s. l. much angulated and much serrated, dark grey, preceded by a grey band; c. s. a slender black ring. V and VIII.

Larva velvety green; dorsal and subdorsal lines pale yellow; spots black (*Gu.*) On maple. VI and IX.

Ba. Brg.! Brs.! Ca. Ct. Ha. Lw.! Ly. M. Pm.! St.! Tn.! Wt.! Y.



E. ORBICULARIA. 1'' 1'''. F.-w. pale grey dusted with reddish grey; f. l. rather angulated; s. l. rather angulated, much serrated; both dark grey; c. s. a reddish grey ring, with whitish centre. V and VIII.

Larva yellowish green; incisions yellowish; dorsal and subdorsal lines nearly yellowish, edged with dark (*Gu.*) On alder and sallow. VI? and IX.

Brg. Lw. Ly. Tn. Wt.: always scarce.

E. PENDULARIA. 11'''—1'' 1'''. F.-w. whitish dusted with pale grey; f. l. rather angulated; s. l. slightly angulated, both indicated only by dark grey dots; c. s. a white-centred dark grey ring, placed in a grey cen. sh. V and VIII.

Larva green, tawny or brown, with paler spiracular line; head and legs reddish (*Hub.*) On birch. VI and IX.

Brg.! Brs.! Ex. Ip. L.D. Lw.! Ly. Pm.! Tn.!! Wt.! Y.!

Family VIII. ACIDALIDÆ.

Imago of moderate or small size; antennæ pubescent or somewhat slightly pectinated in the male, never plumose; abdomen slender, not crested; wings smooth, rather slender, generally entire, and generally with markings common to both wings; hind-wings sometimes with a slight angle.

Larva slender, with no humps; feeding concealed on low plants.

Pupa in a cocoon amongst leaves, or subterranean.

This family comprises rather a numerous assemblage of very similar species; hence there is often considerable difficulty in naming specimens: with the exception of the little *Hyria auroraria*, the elegant *Asthena Blomeri*, and the pretty *Acidalia ornata*, none are attractive from their beauty; and it is only by the neatness of the markings of these dull-coloured insects that we can expect them to possess any charms for the uninitiated. Many species are very local, and where they occur are found in great profusion; hence the young entomologist too hastily assumes that the insect which is pestering him on some summer's evening is universally common, and only learns some time afterwards that his reputed "pest" is a rarity in most of his friends' collections.

Of the few species which seem widely distributed, two make their appearance in May, —the chaste *Asthena candidata* and *Acidalia remutata*,—and are perhaps best obtained by beating the undergrowth in woods. These species continue to occur in June, and are then joined by *Asthena luteata*, *A. sylvata*, *Eupisteria heparata*, *Acidalia scutulata*, *bisetata*, *virgularia*, *imitaria*, *aversata* and *emarginata*. Some of these, especially *scutulata*, *virgularia* and *aversata*, are frequently to be found seated on the fences surrounding gardens, with the wings fully expanded, and apparently inviting the attention of the collector; yet *Scutulata* often manages to escape unnoticed, from its similarity to a piece of wood. At the end of June, also, *Bradyepetes amataria* may be met with on weedy banks and along the sides of ditches.

In July most of these species are still to be met with, with the addition of *Acidalia imitaria*, and that species and the little grey-speckled *Acidalia virgularia* continue to occur during at least the first portion of the month of August.

The young collector may expect, in the course of his first season, to meet with all the species above enumerated, with the exception perhaps of *Asthena sylvata* and *Eupisteria heparrata*, which are not quite so generally distributed as the others. The remaining species of the family are far more local, and unless their haunts be specially visited the collector can hardly expect to meet with them.

We have but six genera of this family, and they do not seem to admit of tabulation.

1. HYRIA. 2. ASTHENA. 3. EUISTERIA. 4. VENUSIA.
5. ACIDALIA. 6. BRADYEPETES.

Genus 1. HYRIA.

Imago: antennæ of the male slightly ciliated; wings entire, smooth, of small size; abdomen slender.

Larva elongate, stiff, flattened above.

Pupa suterranean.

H. AURORARIA (Purple-bordered Gold). 8'''. F.-w. reddish more or less clouded with yellow, and with a yellow central blotch; s. l. bluish purple, placed very near the hind-margin; f. l. reddish, but very indistinct. VII.

Larva tawny-grey, with a series of paler dorsal lozenges and paler subdorsal lines; spots small, black (*Gu.*) On plantain, preferring withered or dried leaves. VI.

Ca. ! Ly. M. !

Genus 2. ASTHENA.

Imago: antennæ of the male pubescent; abdomen slender; wings entire, thin, with several fine wavy lines of nearly equal intensity.

Larva short, swollen in the middle, attenuated in front.

Pupa between leaves or amongst moss.

We have four species, which may be thus distinguished:—

A. Fore-wings with a large tawny apical blotch. *A. Blomeri*.

AA. Fore-wings with no tawny blotch.

B. Fore-wings with numerous wavy transverse lines.

C. Some of the lines darker on the costa. *A. sylvata*.

CC. None of the lines darker on the costa.

D. Wings yellow. *A. luteata*.

DD. Wings white. *A. candidata*.

A. LUTEATA (Small Yellow Wave). 9'''—10'''. F.-w. pale yellow, with several wavy transverse darker lines; c. s. distinct, black. VI.

LARVA UNKNOWN.

Ba. Brg.! Brs.! Ca. Ct.!! Da. Ex.! Ha.!! Hu.! K.! L.D. Lw.! M.! N. Ne. Pm. Sc. St.! Tn.! Wt.! Y.!

A. CANDIDATA (Small White Wave). 9'''—10'''. F.-w. white, with several slender, wavy, pale grey transverse lines; c. s. indistinct, greyish; hind-margin dotted with black. V, VI.

Larva pale green, with a brick-red subdorsal line, interrupted on the 5th to 9th seg.; legs reddish (*Gu.*) On horn-beam. IV.

Ba.!! Brg.!! Brs. Ca.! Ct.!! Da.! Ha.!! Hu.!! K.! L.D.! Lw.!! Ly. M. N. Ne.! Pm.! Sc.! St.! Tn.!! Wt.!! Y.! and in Argyleshire.

A. SYLVATA. 10'''—11'''. F.-w. whitish, with numerous transverse wavy darker lines, and with a slender brownish band on either side of the middle, most distinct on the costa. VI, VII.

Larva lilac-coloured; the sides of the 2nd—4th and 2 last seg. green; above the sides of the 6th—8th seg. are white spots with black centres, and a white oblique streak on the sides (*Freyer*). On alder. VIII.

Brg.! Brs. Ct.! Da. Hu.! L.D.! M. Ne. Pm. Tn.! Wt.! Y. and Stowe Wood, Oxfordshire.

A. BLOMERI. 9'''—10'''. F.-w. bluish white, with a large tawny costal blotch beyond the blackish angulated s. l. VI.

LARVA UNKNOWN.

Brs. Ct.! N. Ne. Sc.! and Castle Eden Dene, Pickering, and near Preston.

Genus 3. EUPISTERIA.

Imago: antennæ slightly pubescent in the male; abdomen slender; wings entire, thick; hind-wings slightly angular. Wings erect during repose.

Larva rather short, not attenuated in front.

Pupa in a slight cocoon on the surface of the earth.

E. HEPARATA. 10'''—11'''. F-w. ochreous dusted with greyish brown, and beyond the middle almost entirely brownish, with 4 transverse brownish lines, the first 2 often indistinct. VI, VII.

Larva yellowish green; dorsal and spiracular lines lemon-yellow; spots yellow (*Gu.*) On alder. IX.

Bi. Brg. Brs. Ca. Ct.! Da.! Hu. Lw. Ly. M. N. Ne. Pm. St. Tn.! Y.

Genus 4. VENUSIA.

Imago: antennæ of the male slightly pectinated; abdomen slender; wings entire, rounded.

LARVA UNKNOWN.

The only species of this genus reminds one strongly of some of the genus *Lobophora*, more especially of *L. lobulata*.

V. CAMBRICA. 1''—1'' 2'''. F-w. pale grey, with numerous darker transverse lines; f. l. curved, black, with 3 distinct black spots; s. l. rather sinuous, black, with several blacker spots; from its middle proceeds a V-like mark. VI e, VII.

LARVA UNKNOWN.

Brs. Da. Hu.! L.D.! M.!! Sc.! St.!! and Sheffield.



Genus 5. ACIDALIA.

Imago : antennæ pubescent or slightly ciliated in the male ; abdomen slender ; wings rounded or angular, rarely emarginate, with numerous transverse lines, generally common to both wings ; hind tibiæ of the male often incrassated, and with stumpy tarsi ; frequently without spurs or with only one pair.

Larva moderately long, slender, slightly thickened posteriorly ; head retractile. These larvæ feed principally on low plants, and are concealed by day.

Pupa subterranean.

We have twenty-six British species of this genus, and probably several others are yet to be detected here. They may be thus roughly tabulated :—

- A. Wings emarginate. *A. emarginata*.
- AA. Wings not emarginate.
 - B. Hind-wings angular. *A. strigilata*, *imitaria* and *emutaria*.
 - BB. Hind-wings not angular ; fore-wings with prolonged tip. *A. aversata*, *inornata*, *degeneraria* and *virgularia*.
 - BBB. Hind-wings not angular ; fore-wings with no prolonged tip.
 - C. A dark band or blotches beyond the second line. *A. scutulata*, *bisetata*, *trigeminata*, *contiguaria*, *herbariata*, *ornata* and *incanata*.
 - CC. A dark central band. *A. rusticata*.
 - CCC. F.-w. with several transverse lines, of nearly equal intensity.
 - D. F.-w. brownish red. *A. rubricata*.
 - DD. F.-w. dark ochreous. *A. ochrata*.
 - DDD. F.-w. greyish ochreous. *A. osseata*, *holosericeata*, *circellata*, *marginepunctata* and *fumata*.
 - DDDD. F.-w. whitish ochreous. *A. immutata* and *remutata*.
 - DDDDD. F.-w. whitish. *A. subsericeata*.

The last ten species may be also tabulated thus, according to the distinctness of the central spot :—

† No c. s. *A. rubricata*, *holosericeata*, *fumata* and *remutata*.

†† C. s. indistinct. *A. ochrata* and *subsericeata*.

††† C. s. distinct. *A. osseata*, *circellata*, *marginepunctata* and *immutata*.

A. OCHRATA. 9'''—10''' . F.-w. dark ochreous; the indistinct f. l. and distinct cen. l. and s. l. darker.

LARVA UNKNOWN (said to feed on *Festuca duriuscula*.)
Southend, in Essex.

A. RUBRICATA. 11''' . F.-w. dull brownish red; f. l. and s. l. nearly straight, dark fuscous; cen. sh. dull fuscous. VI.

LARVA UNKNOWN.
Near York.

A. SCUTULATA. 8½'''—9½''' . F.-w. bone-colour, with a large grey blotch at anal angle, intersected by the wavy subt. l.; f. and s. l. curved, black, sometimes only indicated by dots; c. s. black in a pale grey cen. sh. VI, VII.

Larva pale brown, with oblique darker streaks on the back of the 5th—11th seg. (*Audouin*). On —? V.

Ba.! Bi.!! Brg.!! Brs.! Ca.!! Ct.!! Da.! Ha.!! K.! L.D.! Lw.!! Ly. M.! N. Ne. Sc.! St.! Tn.! Wt.!! Y. and near Glasgow.

A. BISETATA (Small Fan-footed Wave). 9'''—11''' . F.-w. pale greyish-ochreous, dusted with grey; f. l. indistinct; s. l. distinct, blackish, wavy, followed by an *uninterrupted* grey band; c. s. dark grey, FOLLOWED by an indistinct c. l. The development of the hind tibiae of the male into brushes is very striking in this species. VI, VII.

Larva greyish brown, with darker outlines of dorsal lozenges and oblique lateral stripes; spiracular line with yellowish spots (*Sepp.*) On dandelion. VIII—IV.

Common everywhere; generally abundant.

A. TRIGEMINATA (Treble Brown Spot). 10''' . F.-w. whitish ochreous, base of costa dark grey, the wavy dark grey s. l. followed by a DARK grey band INTERRUPTED above the middle; c. s. black, PRECEDED by an indistinct c. l. VII.

LARVA UNKNOWN.

Brs. Ex.!! Ip. Ly. Pm. Tn. and Renfrew.

A. CONTIGUARIA. 10'''. F.-w. pale greyish, f. l. and s. l. wavy, dark fuscous; c. s. black PRECEDED by the wavy dark fuscous c. l. VII.

LARVA UNKNOWN.

North Wales.

A. HERBARIATA. 8'''. F.-w. ochreous, clouded with rusty; f. and s. l. wavy dark fuscous, the latter followed by a wavy fuscous band most distinct below the middle; c. s. black placed in a cloudy dark central band; c. s. of h. w. elongate. VII.

Larva grey, darker on the back, whitish beneath; head and front of 2nd seg. black (*Fischer*). On dried plants, attacking sometimes those in a herbarium. X—V.

A specimen taken near Bedford Square is in Mr. Hunter's collection.

A. RUSTICATA. 8'''. F. w. whitish, a greyish brown blotch at the base of the costa; and a greyish brown central band, in which is the black c. s.; hind-margin clouded with pale greyish ochreous. VII.



LARVA UNKNOWN.

Isle of Portland and Northfleet, near Gravesend.

A. OSSEATA. 9'''. F.-w. whitish ochreous, the costa brownish; f. l. and s. l. wavy, brownish, the latter followed by 2 pale brown bands; c. s. black, on a pale brownish cen. sh.; hind-margin spotted with black. VI e — VII.

LARVA UNKNOWN.

Bi. Ca.!! Ct.!! Ex. Ha.!! M. St.

A. HOLOSERICEATA. $8\frac{1}{2}$ '''— $9\frac{1}{2}$ '''. F.-w. pale ochreous, the costa darker; the wavy f. l., c. l. and s. l. grey, the latter followed by 2 grey bands; c. s. rarely perceptible, blackish. VII.

LARVA UNKNOWN.

Brs.!!

A. VIRGULARIA (Small Dusty Wave). 8'''—9½'''. F.-w. pointed, whitish dusted with grey; f. l. curved dark grey; s. l. a series of dark grey dots; c. s. black followed by the cen. sh. VI e, VII, VIII b.

Larva pale grey, with a series of dark grey dorsal lozenges (*Hub.*) On —?

Ba.! Bi. Brg. Brs.! Ca.! Ct.!! Da. Ed.! Ex.! Ha.!! Hu.!! K.! Lw.! M.! Ne. St.! Wt.! Y. and Renfrew.

A. CIRCELLATA. 9'''. F.-w. rounded, yellowish white dusted with grey; c. s. and marginal spots distinct, black; f., c. and s. l. greyish ochreous; the f. l. *angulated* near the costa, and closely approximating to the c. l. on the fold; h.-w. rather *angular*. Closely allied to *A. marginepunctata*. VI.

LARVA UNKNOWN.

Near Manchester.

A. ORNATA (Lace Border). 1''. F.-w. white, the wavy black s. l. followed by a grey band, in which are 2 tawny blotches, one above the middle, the other at the anal angle. VI e, VII b.



Larva grey; dorsal and subdorsal lines reddish; between are some short darker streaks (*Freyer*). On thyme. IV and VIII.?

Box Hill!!

A. INCANATA. 11''—1''. F.-w. whitish ochreous, dusted with grey; f. l. and s. l. wavy, dark grey, but rather indistinct; the blackish c. s. placed in the dark grey cen. sh. VII, VIII e.

Larva dark brownish green, with 2 rows of greenish white longitudinal streaks (*Treitschke*). On pink, vetch, yarrow. VI.

Ba.!! Brg. Brs. Ex. Lw. Ly. M. Ne. St. and Ardrossan.

A. MARGINEPUNCTATA. 9'''. F.-w. pale greyish ochreous, dusted with blackish; f. l. *curved*; s. l. sinuous, both grey; central line slightly curved, pale brownish, preceded by a black c. s.; marginal spots distinct, black; h.-w. *rounded*. VI.

This is closely allied to *A. circellata*.

LARVA UNKNOWN.

Ly. Pm. and near Farnham (previous to the encampment at Aldershott).

A. SUBSERICEATA. 10'''—11'''. F.-w. whitish, with 4 grey transverse lines, slightly wavy, a blackish c. s. and rather indistinct blackish marginal spots. VI.

LARVA UNKNOWN.

Bi. Brs. Lw. Ly. M. Pm. Wt.

A. IMMUTATA. 11'''—1'' 1'''. F.-w. whitish, delicately dusted with black, with 5 wavy transverse ochreous lines; c. s. black. VI, VII.

LARVA UNKNOWN.

Brs. Ca.! M. Sc. Y.!

A. REMUTATA (Cream Wave). 1'' 2'''—1'' 3'''. F.-w. whitish dusted with fuscous; the f. l., c. l. and s. l. wavy, pale fuscous, and frequently a pale fuscous band near the hind-margin; no c. s. V e, VI.

LARVA UNKNOWN?

Ba.! Bi.!! Brg.! Brs.!! Ca.! Ct.! Hu.! K.! L.D.! Lw.!! Ly. M.! Ne.! Pm.! Sc.! St.! Tn.! Wt.!! Y. and near Glasgow.

A. FUMATA (Smoky Wave). 11'''—1'' 1'''. F.-w. whitish ochreous, much dusted with fuscous; the f. l. and s. l. wavy, fuscous; an indistinct fuscous cen. sh. and submarginal band; no c. s. VI.

LARVA UNKNOWN.

Brs. L.D.! M.!! N. Y. Common on the hills in the West of Scotland.

A. STRIGILATA. 1''—1'' 1'''. F.-w. whitish clouded with pale fuscous; f. l. indistinct; c. l. broad, fuscous, preceded by the blackish c. s.; s. l. indented, fuscous. VI.

Larva yellowish grey; spiracular line yellowish white, dorsal line dark grey (*Freyer*). On *Stachys sylvatica*. IV, V.

Darenth Wood, and near Carlisle; rare.

A. IMITARIA (Small Blood Vein). 1''—1'' 1'''. F.-w. reddish ochreous; f. l. angulated, pale grey; s. l. sinuous, grey; c. l. obliquely placed, dark grey, followed by a paler shade; c. s. indistinct, blackish. VII, VIII b.

LARVA UNKNOWN.

Ba. ! Bi. ! Brg. Brs. ! Ca. ! Ct. !! Da. ! Ex. !! Ha. !! K. !
Lw. ! Ly. M. ! Ne. Pm. ! Sc. St. !! Tn. Wt. ! Y.

A. EMUTARIA. 11'''—1''. F.-w. white, with a very delicate pink tinge; s. l. indicated by blackish dots, preceded by a pale grey oblique band; c. s. grey, indistinct. VI.

LARVA UNKNOWN.

Lyndhurst.

A. AVERSATA (Ribband Wave). 1'' 2'''—1'' 3'''. F.-w. ochreous, with a faint reddish tinge dusted with grey; the f. l., c. l. and s. l. form 3 nearly parallel dark grey lines; c. s. blackish, preceding the c. l.; fringes with black spots; a common variety has the space between c. l. and s. l. filled up grey, forming a band. VI, VII.

Larva dark brown to the 9th seg., then yellowish grey, with oblique brown lines on the back; on the 5th to 8th seg. the spiracular line is whitish, with a white spot above it (*Freyer*). On *Geum urbanum*. IV, V.

Common everywhere: generally abundant.

A. INORNATA. 1'' 2'''—1'' 3'''. F.-w. glossy, greyish ochreous, with the f., c. and s. l. slightly darker, but the c. l. especially indistinct, and not reaching to the costa; c. s. black; fringes with no black spots. VI e, VII.

LARVA UNKNOWN.

Brg. Lw. Ly. M. ! Tn. and Stowe Wood, Oxfordshire.

A. DEGENERARIA (Portland Ribband Wave). 1''—1'' 1'''. F.-w. greyish ochreous, tinged with reddish along the costa and towards the base; the f. l., c. l. and s. l. form 3 nearly parallel grey lines; the space between f. l. and c. l. filled up with dark grey, forming a band, in which the blackish c. s. is hardly perceptible. VII.

LARVA UNKNOWN.

Isle of Portland.

A. EMARGINATA (Small Scallop). 10'''—11'''. F.-w. reddish ochreous; the hind-margin scalloped; f. l. curved; s. l.



rather sinuous, both blackish ;
c. s. blackish, preceded by a
dark grey cen. sh. VI, VII b.

Larva ochreous, with a broad
dorsal line, which is evanescent
on the anterior segments
(*Treitschke*). On *Convolvulus*
and bedstraw. VII.

Ba. ! Brg. Brs. Ex. ! Ha. ! K. ! Lw. Ly. M. N. Pm. !
Pl. St. Tn. ! Y.

Genus 6. BRADYEPETES.

Imago: antennæ of the male slightly pectinated, the tip
filiform; fore-wings rather falcate at the tip; hind-wings with
the middle of the hind-margin prolonged.

Larva with the 5th segment much swollen; head small,
rather quadrate. Lives concealed amongst low plants.

Pupa amongst leaves.

B. AMATARIA (Blood-Vein). 1" 2''' — 1" 3'''. F.-w.
whitish grey dusted with grey; f. l. very indistinct; a dark
red streak from middle of inner margin to tip of wing; s. l.
wavy, grey; c. s. narrow, reddish grey. VI, VII.



Larva grey; dorsal line white; subdorsal line whitish, but
rather interrupted; oblique white streaks from the dorsal to
the subdorsal lines on the middle segs. (*Hub.*) On dock and
Polygonum. IX.

Ba. ! Brg. ! Brs. ! Ca. Ct. !! Da. Ex. ! Ha. !! K. !! Lw. !
M. N. Pm. ! Pl. St. !! Tn. ! Wt. ! Y. !

Family IX. CABERIDÆ.

Imago of moderate size; antennæ of the male sometimes pectinated; wings entire, rounded, generally white, with few markings; in repose the wings fully extended.

Larva rather long, not humped, slightly swollen behind; feeding exposed on trees.

Pupa in a cocoon.

This family is of small extent, comprising only six British species, in all of which (excepting *Aleucis pictaria*) the wings are white. *Aleucis pictaria* is the earliest to appear, occurring on the renowned Dartford Heath fence in the middle of April. Guenée says he never took this insect in the day time, but obtains it at dusk flying over the blackthorns in blossom. The remaining species all appear in the course of the month of May, and 'the White Wave' (*C. pusaria*) and its congener, *C. exanthemata*, are universally abundant; *C. rotundaria* is more local. *Corycia punctata* and *taminata* are also rather local species, but both appear to be widely distributed. In June most of these species may still be met with. Indeed, *Pusaria* and *Exanthemata* appear to be double-brooded, and are to be met with throughout July and August.

The three genera of this family may be readily separated as follows:—

A. Fore-wings grey. Genus 3. ALEUCIS.

AA. Fore-wings white.

B. With distinct lines; no marginal blotches. Genus 1.

CABERA.

BB. With marginal blotches; lines indistinct. Genus 2.

CORYCIA.

Genus 1. CABERA.

Imago: antennæ of the male slightly pectinated, the tip filiform; wings entire, rounded, white, with the lines parallel, composed of dots.

Larva elongate, cylindrical, a little larger behind; head as large as the next segment; feeding on trees.

Pupa enclosed in earthen cocoons or under moss.

The three species may be easily recognised as follows:—

A. Wings with the lines and irrorations greyish ochreous.

C. exanthemata.

AA. Wings with the lines and irrorations clear grey.

B. The f. and c. l. closely approximate. *C. rotundaria*.

BB. The f., c. and s. l. equidistant. *C. pusaria*.

C. PUSARIA (White Wave). 1" 2'''—1" 4'''. F.-w. white dusted with grey, with 3 equidistant grey lines; f. l. slightly curved; c. and s. l. almost straight. V—VIII.

Larva green speckled with red, and with a row of dark brown spots on the back; sometimes reddish, with pale yellow subdorsal spots (*Hub.*) On birch. VI, IX.

Abundant everywhere.

C. ROTUNDARIA. 1"—1" 1'''. F.-w. more rounded than in *Pusaria*, white with grey atoms, with 3 grey lines; f. l. angulated near the costa, approximating to the c. l.; s. l. nearly straight; c. l. of h.-w. very indistinct. V.

Larva pale green (*Machin in litt.*) On birch. IX.

Brs. Ly. Tn.

C. EXANTHEMATA. 1" 1'''—1" 3'''. F.-w. white dusted with pale fuscous; f. l. slightly curved; s. l. slightly curved and slightly indented; both are pale ochreous-brown; c. l. paler. V—VIII.

This species seems much more variable than either of the two preceding.

Larva yellowish green, darker on the back; sometimes some reddish brown spots on the back; spiracular line white (*Hub.*) On sallow. VI, IX.

Abundant everywhere.

Genus 2. CORYCIA.

Imago : antennæ of the male simple ; wings entire, rounded, satiny white ; abdomen rather stout.

Larva rather thick, with no humps.

Pupa on the surface of the earth.

We have two species of this genus, which may be easily recognised.

F.-w. with a grey blotch at hind-margin ; no costal spots. *C. punctata*.

F.-w. with no grey blotch at hind-margin ; two black costal spots. *C. taminata*.

C. PUNCTATA (Clouded Silver). 1''—1'' 1'''. F.-w. white, with a slender grey blotch on the inner margin before the middle ; hind-margin clouded with blackish ; c. s. black, distinct. V, VI.

Larva bright green, with a row of red dorsal spots ; head reddish (*Machin in litt.*) On sloe and wild cherry. IX.

Ba. Brg. ! Ca. Ct. ! Ex. L.D. Ly. M. !! N. Pm. ! Tn. Y.

C. TAMINATA. 1''—1'' 1'''. F.-w. whitish, with two blackish spots on the costa, at the commencement of the very indistinct f. and s. l. ; c. s. indistinct, blackish. V, VI.

LARVA UNKNOWN. Guenée believes he bred this species from a larva found on sallow.

Bi. Brg. Ca. Ex. Lw. ! Ly. Wt. ! Y.

Genus 3. ALEUCIS.

Imago : antennæ slender and simple in both sexes ; wings entire, silky ; fore-wings rather pointed at the tip.

Larva undescribed.

A. PICTARIA. 1''—1'' 1'''. F.-w. grey ; f. and s. l. wavy, dark grey ; c. s. blackish ; hind-margin spotted with black. IV.

This insect rather reminds one of *Hybernica rupicaprararia*.

LARVA UNDESCRIBED.

Dartford Heath ; *Lw.* ; *Colchester*.

Family X. MACARIDÆ.

Imago of moderate size; antennæ of the male pubescent, rarely pectinated; fore-wings generally with prolonged tip and an indentation below; hind-wings rather angular, sometimes dentate.

Larva with 10 or 12 legs, sometimes bristly, sometimes with fleshy filaments, or without these peculiarities.

Pupa in a cocoon amongst leaves or on the ground.

This family, even with the addition of *Aventia flexula* (a species of uncertain location) includes only five British species, all of which appear in the perfect state in the months of June and July. The most plentiful is 'the V moth,' *Halia Wavaria*, a common garden insect, the larva of which is often very injurious to currant and gooseberry-bushes; *Aventia flexula* is not rare, but is nowhere very common. *Macaria liturata* is common in fir woods, where it may be seen at rest on the trunks of trees; *M. notata* (the Peacock moth) and *M. alternaria* are both rather scarce, and the young collector who meets with either his first or second season may deem himself fortunate.

The genera of this family do not conveniently admit of tabulation; they are—

1. AVENTIA. 2. MACARIA. 3. HALIA.

Genus 1. AVENTIA.

Imago: antennæ of the male simple; fore-wings rather oblong, hooked, and with an indentation below the tip; hind-wings slightly prominent in middle of hind-margin.

Larva with 12 legs (the additional pair used in walking?); a row of fleshy filaments above the legs; feeding on lichen.

Pupa in a slight cocoon.

A. FLEXULA (Beautiful Hook-tip). 1"—1" 3". F.-w. grey, darker towards the hind-margin; f. and s. l. yellow, both angulated near the costa; c. s. black, double. VII.



Larva variegated with green, brown and white, with 12 legs, with fleshy filaments on the sides, as in *Catocala* (Hub.) On lichen. IV, V.

Brg. Brs. Ca.! Ex. K. Ly. Pm. St. Tn. Wt. Y.; Dorking; frequents old gardens.

Genus 2. MACARIA.

Imago: antennæ simple or slightly pubescent; fore-wings oblong, with the tip slightly hooked, with a rounded indentation below the tip; hind-wings rather indented, with a more or less prolonged caudal angle.

Larva rather short, not humped, not attenuated; feeding exposed on trees and shrubs.

Pupa in a cocoon at the surface of the ground.

We have three species, which may be thus distinguished:—

A. Fore-wings bluish grey. *M. liturata*.

AA. Fore-wings whitish.

B. Tawny costal blotch hidden by a greyish band. *M. alternata*.

BB. Costal tawny blotch distinct; no greyish band. *M. notata*.

M. ALTERNATA. 1" 1"—1" 2". F.-w. pale grey; f., c. and s. l. indistinct, grey, the latter followed by a grey band, in the middle of which is an indistinct dark spot; towards the costa it is tinged with tawny. VII.

Larva light green, shining; legs reddish brown; 3 triangular reddish brown marks on the sides of the middle segs.: changes to uniform reddish brown before entering the ground (*Norcombe in litt*). On sallow. IX.

Ly. Exeter.

M. NOTATA (Peacock). 1" 1'''—1" 3'''. F.-w. whitish; f., c. and s. l. indistinct, grey; in the middle of the latter a conspicuous black spot, intersected by 3 yellow lines; beyond the s. l. on the costa a tawny blotch. VI.



Larva dark green, yellowish brown at the sides, and with a row of yellowish brown dorsal

spots (*Treitschke*.) On sallow. IX.

Brg. Ex. Ly. N. Pm.! Pl. Tn. Wt.

M. LITURATA (Tawny-barred Angle). 1" 2'''—1" 3'''. F.-w. slaty grey; f., c. and s. l. indistinct, darker grey, but appearing as blackish spots on the costa; beyond the s. l. is a yellowish band, edged towards the costa with tawny. VII.

Larva green, with whitish dorsal and subdorsal and white spiracular lines; head brown (*Hub.*) On fir. IX.

Bi.! Brg. Brs. Ct.! Ed. Ex. Hu. Ly. M.!! Ne. Pm.! Sc.! St.! Wa.! Wt.! Y.! Harrowgate! and Ayrshire.

Genus 3. HALIA.

Imago: antennæ of the male pubescent; abdomen rather thick; fore-wings with the tip not pointed and with no indentation; central spot oblong; hind-wings very slightly dentate.

Larva rather short, the spots warty, with stiff bristles.

Pupa subterranean.

H. WAVARIA (the V moth). 1" 2'''—1" 3'''. F.-w. pale grey with a faint violet tinge; on the costa are 4 blackish spots, the second of which unites with the black c. s., which emits a fork towards the base of the wing, thus forming a black V. VII.

Larva pale green, with 4 wavy yellowish white lines on the back; spiracular line pale yellow; spots distinct, black (*Gu.*) On currant and gooseberry, not unfrequently stripping those trees of their leaves. V.

Common everywhere: generally abundant.

Family XI. FIDONIDÆ.

Imago of moderate or rather large size; antennæ of the male generally pectinated, sometimes plumose; wings entire, never angular; female sometimes smaller than the male; flight diurnal.

Larva elongate, cylindrical, generally neither swollen nor humped, with two horizontal points from the anal segment.

Pupa generally subterranean.

This pretty family contains fifteen British species, many of which are brightly coloured, as we so often find to be the case among day-flying insects. Clover fields and heaths are the resorts of many of the species, but 'the Bordered White' (*F. piniaria*) is only to be found in fir woods.

The earliest to appear in spring is the scarce mountain species, *Fidonia carbonaria*, which is sometimes met with at the end of April. In May it still continues to occur, and in the same month 'the Latticed Heath' (*S. clathrata*) appears in clover fields, *L. petraria* and *F. atomaria* on heaths, *N. pulveraria* in woods and lanes, *F. piniaria* in fir woods, and *A. citraria*, a very local species, is also to be found in clover fields. In June *Mesia Belgiaria* appears on heaths; *Fidonia brunnata* is on the wing in the North of Perthshire; *F. limbata*, though local, is common amongst broom in several places; the spurge-feeding *Minoa Euphorbiata* appears in woods, and, though widely distributed, seems to be nowhere common; *A. strigillaria* is not uncommon in heathy places amongst broom; and the local *Scoria dealbata* haunts its private localities, rarely disturbed by the intrusion of an entomologist. *S. clathrata*, *L. petraria*, *N. pulveraria*, *F. piniaria* and *atomaria*

continue to be met with in June, and the latter species prolongs its reign until July, in which month *F. brunneata* and *A. strigillaria* continue to be found, and *Selidosema plumaria* then makes its *début* on sandy heaths. In August *Aspilates citraria* is again on the wing, and *A. gilvaria* is then also plentiful in its special localities. None of this family seem rare, but many are extremely local, and whereas *F. carbonaria* and *brunneata* seem peculiar to the North, *S. dealbata*, *A. citraria* and *gilvaria* seem to be peculiarly southern species.

There are nine genera in this family, but they do not seem to admit of a tabular arrangement:—

1. STRENIA. 2. LOZOGRAMMA. 3. NUMERIA. 4. MÆSIA.
5. SELIDOSEMA. 6. FIDONIA. 7. MINOA. 8. SCORIA.
9. ASPILATES.

Genus 1. STRENIA.

Imago: antennæ of the male pubescent; wings rather broad, with similar markings on both wings; hind-wings slightly angulated; fringes chequered.

Larva short, rather flattened beneath; spots not warty, but with distinct hairs; feeding on low plants.

Pupa subterranean.

S. CLATHRATA (Latticed Heath). 1" 1''' F.-w. pale whitish ochreous powdered with grey, with the veins and four slender bands dark reddish grey. V, VI.



Larva pale green, with 2 white dorsal lines edged with darker green; subdorsal line similar; spiracular line white

(Gu.) On *Medicago* and *Hedysarum*. IX, V.

Brg.! Brs. Ca.!! Da.! Ex.! L.D.! Lw.! N. Ne.! Sc.! St.! Wt.! Y.! Oxford.

Genus 2. LOZOGRAMMA.

Imago: antennæ of the male simple; abdomen rather long and slender; fore-wings oblong, the tip rather pointed; hind-wings rounded, almost without markings.

LARVA UNKNOWN.

L. PETRARIA (Brown Silver line). 1" 2'''—1" 4'''. F.-w. pale brown; f. l. slightly angulated near the costa, dark brown, edged externally with paler; s. l. nearly straight, thickest on the inner margin, dark brown edged externally with whitish; c. s. dark brown. V, VI.

LARVA UNKNOWN.

Ba.!! Bi.!! Brg.!! Brs.!! L.D.!! Lw.!! Ly.!! M.!! N. Pm.!! St.!! Tn.!! Wt.!! Y.!!

Genus 3. NUMERIA.

Imago: antennæ of the male pectinated, the extreme tip simple; abdomen slender; wings dusted; fore-wings with the tip rather pointed; hind-margin slightly elbowed; hind-wings rounded.

Larva elongate, with little dorsal humps; head bifid; feeding exposed on trees.

Pupa in a cocoon amongst leaves.

N. PULVERARIA. 1" 3'''—1" 4'''. F.-w. ochreous-brown dusted with brown; f. l. almost straight; s. l. much angulated; both are dark brown, and the space included only slightly paler. V e, VI.

Larva ochreous marbled with brown; spiracular line whitish ochreous; a small hump on the 5th seg., a larger one on the 9th, and 2 little eminences on each of the 10th to 12th seg. (Hub.) On willow. VII.

Bi. Brg.!! Brs. Ct. Da.!! Ex. Hu. K. L.D.!! Lw. M.!! N. Ne. Pm. Sc.!! St.!! Tn.!! Wt. Y.!! and Argyleshire.

Genus 4. MÆSIA.

Imago: antennæ of the male pectinated to the tip; wings rounded, entire, dusted, with the lines and c. s. distinct; female much smaller than the male.

Larva thick, cylindrical; a slight thorn-like eminence on 12th seg., and the anal seg. deeply bifid.

Pupa subterranean.

M. BELGIARIA. 1'' 2'''—1'' 5'''. F.-w. grey dusted with darker, sometimes with an ochreous tinge; f. l. black, nearly straight; s. l. curved, and with a broad shade beyond its lower half; c. s. black, distinct. VI.

Larva ashy grey, paler on the back, and with short black streaks; a black line on the 2nd to 4th seg.; posterior segs. with a few slight eminences (*Treitschke*). On heath. IX, III.

Bi. Ed. Hu. Ly. M.! Ne. and near Glasgow.

Genus 5. SELIDOSEMA.

Imago: antennæ of the male plumose; abdomen rather slender; fore-wings rather oblong, the tip not pointed; hind-wings very slightly dentate; all the wings dusted, with dark hind-margins; female rather smaller than the male.

Larva cylindrical, not attenuated, not humped; feeding on low plants.

Pupa subterranean.

S. PLUMARIA. 1'' 5'''—1'' 6'''. F.-w. grey, the hind-margin darker; f. l. curved, but very indistinct, dark grey; s. l. whitish grey; cen. sh. dark brown-grey, sometimes very conspicuous. VII.

Larva brown marbled with black; dorsal line black, expanded into a spot at the end of each seg.; incisions of the segs. whitish (*Hub.*) On low plants?

Bi. Ly.! M.

Genus 6. FIDONIA.

Imago: antennæ of the male pectinated, often plumose; abdomen rather slender; fore-wings rather triangular, but the tip not pointed; hind-wings rounded; all the wings more or less dusted, and with nearly similar markings; female smaller than the male (except in *Piniaria*, where it is larger); flight diurnal.

Larva elongate, cylindrical, not attenuated, not humped, with the usual lines distinct; feeding on trees or low plants.

Pupa subterranean.

We have five species, which may be thus distinguished:—

A. F.-w. whitish, with distinct dark bands. *F. carbonaria* and *F. atomaria*.

AA. F.-w. yellowish brown, with very indistinct lines. *F. brunneata* and *F. piniaria* ♀.

AAA. F.-w. yellow or white, with costa and hind-margin dark. *F. piniaria* ♂ and *F. limbaria*.

F. CARBONARIA. 9''' . F.-w. grey speckled with white; f. l. thick, dark grey; s. l. sinuous, edged externally with white; c. s. black; subt. l. white. IV, V.

LARVA UNKNOWN.

Perthshire and Engleborough.

F. ATOMARIA (Common Heath). 11'''—1" 1''' . F.-w. whitish yellow dusted with brown; f. l. curved, brown; s. l. curved and indented, brown, uniting on the inner margin with a brownish cen. sh.; the hind-margin is brown, intersected with a whitish yellow subt. l., in the middle of which is a large pale blotch; the female is more whitish, with the bands greyer. V, VII.

Larva very variable, reddish brown marbled with black, sometimes with dorsal lozenges; spiracular line pale (*Hub.*) On *Centaurea*, *Lotus*, &c. VI, IX.

Ba.! Brg.! Ca.! Da.! Ed.!! Ex.! Ha. Hu.!! L.D.! Lw.! Ly.! M.!! N. Ne.!! Pm.! Sc.!! St.! Tn.!! Wt.! Y.! and near Glasgow.

F. PINIARIA (Bordered White). 1" 3'''—1" 4''' . *Male*.—F.-w. yellowish white or white; the costa and inner margin brown, and the entire tip brown-black; the white portion of the wing is intersected by 2 or 3 brown veins. *Female* yellowish brown, darker at the tip, and sometimes with a darker central band. V, VI.

Larva green ; dorsal line white ; subdorsal line yellowish white ; spiracular line yellow (*Dup.*) On fir. VIII, IX.



Bi.!! Brg.!! Brs. Ct.! Da.! Ed.!! Hu.! Lw.!! Ly.! M.!! Ne.!! Pm.! Sc.!! St. Wa.!! Wt.!! Y.! and near Glasgow.

F. BRUNNEATA. 11'''—1''. F.-w. yellowish brown, with the f, c. and s. l. very indistinctly darker. VI, VII.

Larva violet-red, with white lines on the back ; spiracular line yellow ; head flesh-colour (*Treitschke*). On bilberry. V. Rannoch.

F. LIMBARIA (Frosted Yellow). 11'''—1' 1'''. F.-w. deep yellow speckled with black, especially along the costa, and with a black hind-margin. VI.

Larva greenish brown ; spiracular line yellow (*Dup.*) On broom. VII, IX, X.

Dunkeld and Bridge of Earn ; St.!!

Genus 7. MINOA.

Imago : antennæ of the male slightly pubescent ; abdomen slender ; wings entire, rounded, silky, with no markings and with the fringes concolorous.

Larva short, thick, with numerous short hairs.

Pupa enclosed in a small earthen cocoon.

M. EUPHORBIATA. 9'''—10'''. F.-w. pale greyish brown ; fringes paler. VI.

Larva pale green or greyish black ; dorsal line darker ; subdorsal and spiracular lines spotted with yellow ; head pale red (*Gu.*) On spurge (*Euphorbia*). X.

Brg. Ha. Lw. Ly. N. St.; Darenth Wood; Dursley; and Stowe Wood, near Oxford.

Genus 8. SCORIA.

Imago: antennæ of the male simple; abdomen long and slender; wings broad, similar, white with darker veins; hind-wings slightly sinuous.

LARVA UNKNOWN.

Pupa enclosed in a tough cocoon.

S. DEALBATA (Black-veined). 1" 6''' — 1" 8''' . F.-w. creamy white, the veins blackish. VI.

LARVA UNDESCRIBED. Professor Zeller has bred the species from an elongate fusiform yellow cocoon (rather like the cocoon of an *Anthrocera*), which was attached to a stem of grass.

Ct.; near Charing, Kent, and Faversham.

Genus 9. ASPILATES.

Imago: antennæ of the male pectinated to the tip; fore-wings entire; hind-margin rather rounded; hind-wings rounded or slightly dentate, less distinctly marked than the fore-wings.

Larva elongate, attenuated, not humped, with two anal points; rolls up its anterior segs.; feeds on low plants or shrubs.

Pupa enclosed in an earthen cocoon.

We have three species, which may be thus described:—

F.-w. with three transverse lines. *A. strigillaria*.

F.-w. with two transverse lines. *A. citraria*.

F.-w. with one transverse line. *A. gilvaria*.

A. STRIGILLARIA (Grass Wave). 1" 3''' — 1" 4''' . F.-w. pale grey dusted with darker grey; f. l. slightly angulated, dark grey; s. l. slightly curved and slightly serrated, dark grey; c. l. dark grey, slightly curved; on the inner edge of it is sometimes an indistinct blackish c. s. VI, VII.

Larva grey; subdorsal line white from the 5th to 12th

seg.; dorsal line dark grey, interrupted; sides tinged with reddish (*Freyer*). On broom. IX, X.

Ba. ! Brg. ! Ca. !! Ex. ! L.D. ! Ly. ! M. !! Tn. Y. !

A. CITRARIA (Yellow Belle). 1" 1'''—1" 3'''. F.-w. yellowish, slightly dusted with grey; f. l. curved and slightly serrated, grey; s. l. nearly straight, slightly serrated below the middle, grey; c. s. grey. V, VIII.

LARVA UNKNOWN.

Pl. ! and Isle of Portland.

A. GILVARIA (Straw Belle). 1" 4'''—1" 5'''. F.-w. pale yellow dusted with pale brown; f. l. not represented; s. l. forms a straight oblique streak from the tip of wing to near inner margin, rather dark grey; c. s. grey. VIII.

Larva whitish with a faint rosy tinge; subdorsal and spiracular lines reddish grey; 2 spines project from the anal seg. (*Hub.*) On yarrow. VI

Ba. Ex. Ip. Box Hill !

Family XII. ZERENIDÆ.

Imago: antennæ of the male thickened, not pectinated; abdomen of the male long, often spotted with black; wings broad, entire, white, with grey or black spots.

Larva short, rather thick, not attenuated, not humped; feeding exposed on trees and shrubs.

Pupa short and blunt.

This family only contains five British species, and it is even doubtful whether we have more than four, as the claims of *Pantaria* to be considered indigenous have hardly been made out satisfactorily. Of the four remaining species, all prettily marked with black and white, two, *Abraxas grossulariata* and *Lomaspilis marginata*, are abundant nearly everywhere; and *A. ulmata* and *Ligdia adustata*, though rather local, are by no means uncommon. *L. marginata* is found

amongst sallows in May and the two following months. In June *A. ulmata* appears amongst elm trees, and the neat little *Ligdia adustata* amongst spindle: this latter keeps out during much of the following month, when the showy *A. grossulariata* becomes at times a perfect pest; it is remarkable for its sluggish vacillating flight, and is often found in gardens, from the predilection of the larvæ for the foliage of currant bushes and wall fruit trees.

The three genera comprised in this family might be tabulated as follows:—

A. Wings more than $1\frac{1}{2}$ inch in expanse. Genus 1. ABRAXAS.

AA. Wings rarely more than 1 inch in expanse.

B. Hind-margin of f.-w. pale. Genus 2. LIGDIA.

BB. Hind-margin of f.-w. dark. Genus 3. LOMASPILIS.

But then varieties of the sole representative of this last genus occur with the hind-margin of fore-wings pale. The species of the genus *Abraxas* are excessively liable to varieties.

Genus 1. ABRAXAS.

Imago: antennæ of the male slightly pubescent; abdomen long, spotted with black; wings ample, entire, rounded, white, with grey or black spots.

Larva rather short, thick, with black lines or spots on the back; feeding exposed on trees or shrubs.

Pupa in a slight web amongst trees.

We have three species, which may be thus distinguished:—

Base of f.-w. yellow spotted with black. *A. grossulariata*.

Base of f.-w. dark yellowish grey. *A. ulmata*.

Base of f.-w. yellow. *A. pantaria*.

Of this last species the head is yellow; in *A. ulmata*, varieties of which are often mistaken for *A. pantaria*, the head is brown.

A. GROSSULARIATA (Large Magpie). 1'' 7'''—1'' 8''' . F.-w. white, with several rows of black spots, forming interrupted black bands; an orange blotch at the base, and a slender orange band beyond the middle, bordered internally by a black band hardly interrupted, externally by a row of black spots. VII, VIII.

Larva white dotted with black, with 2 large black dorsal spots on each seg.: spiracular line reddish yellow (*Gu.*) On currant, sloe, &c. V.

Common everywhere: generally abundant.

A. ULMATA. 1'' 8'''—1'' 9''' . F.-w. whitish, with a tawny and grey basal blotch, and a tawny and grey blotch on the inner margin near the anal angle; from this proceed several grey spots, forming a rather curved interrupted band; hind-margin and central portion of the wing more or less clouded with pale grey; head and front of thorax brown. VI.

Larva whitish dotted with black, bluish grey at the sides; spiracular line pale yellow; head black (*Hub.*) On elm. IX.

Ba.!! Bi. Brs.!! Ct.!! Da.! Hu.!! L.D.! M.!! N. Ne.!! Sc.! Y.!

A. PANTARIA. 1'' 7'''—1'' 8''' . F.-w. white; base and blotch at anal angle yellowish; a few pale grey spots indicate the s. l., a large grey central blotch; head and thorax yellow. VI, VII.

LARVA UNDESCRIBED On ash?

Said to have occurred in Oakhampton Park, Somerset.

Genus 2. *LIGDIA*.

Imago: antennæ of the male slightly pubescent; abdomen slender, with a dark spot on the first seg.; wings of moderate size, white; fore-wings with the base and a band dark; hind-wings slightly dentate.

Larva short, cylindrical, without humps; head round; feeding on shrubs.

Pupa between united leaves.

L. ADUSTATA (Scorched Carpet). 1''—1'' 1''' . F.-w. white, basal blotch purplish brown; s. l. angulated and then

curved, followed by a purplish brown band; hind-margin clouded with purplish brown. VI, VII.

Larva beautiful green; the head, legs, and lateral spots on the 6th and 7th seg. dark yellowish red (*Gu.*) On spindle. V.

Ba.!! Brg.! Brs. Ca. Ct. Ex.! Ha. Lw.! Ly. N. Pm. Pl. St.! Tn. Y.



Genus 3. LOMASPILIS.

Imago: antennæ of the male slightly pubescent; abdomen rather stout, unicolorous, dark grey; wings of moderate size, entire, rounded, white with a dark border.

Larva rather short, stiff, not humped, with all the lines distinct; feeding exposed on trees.

Pupa subterranean.

L. MARGINATA (Clouded Border). 11''' — 1''. F.w. whitish; the costa broadly grey-brown, twice interrupted, generally with a few smaller spots in the middle between it and the inner margin; hind-margin greyish brown. V—VII.

Larva dark green; dorsal and subdorsal lines slender; spiracular line broad (*Gu.*) On sallow, &c. VI, IX.

Abundant everywhere.

Family XIII. LIGIDÆ.

This family contains but a single heath-loving insect, named very inappropriately after the horse-chestnut, on which it does *not* feed.

Genus 1. PACHYCNEMIA.

Imago: antennæ slightly pubescent in both sexes; abdomen rather slender, long; wings entire; fore wings oblong, narrow; hind-wings rounded.

Larva elongate, smooth; the head rather thick; feeding on heath.

Pupa subterranean.

P. HIPPOCASTANARIA. 1"—1" 1". F.-w. greyish brown with a faint purplish tinge; f. l. angulated, rather indistinct; s. l. curved and serrated, but very indistinct, the included space slightly darker; c. s. blackish. V.

LARVA UNDESCRIBED. On heath. IX.

West Wickham, the New Forest, and Brighton.

Family XIV. HYBERNIDÆ.

Imago: antennæ of the male pubescent or slightly pectinated; abdomen slender; wings entire, rather broad; hind-wings well developed, covered in repose; female apterous, or with only rudimentary wings.

Larva moderately long, smooth, cylindrical, not attenuated, not humped; feeding exposed on trees and shrubs.

Pupa short, subterranean.

This family comprises only six British species of true 'winter moths,' all appearing in the perfect state between October and March. Two other species of this family are very likely to occur here, and will probably ere long be added to our lists. Of our present species none are rare, and the young collector need scarcely despair of obtaining all in his first winter campaign. The 1st of January will generally allow of the capture of *H. rupicaprararia*, and sometimes even of precocious specimens of *H. progemmaria*; both species are common on hedges in February, when the funny-looking females, with their pigmy wings, may also be obtained by a careful scrutiny after dark. *H. leucophearia* should be sought in oak woods, on the trunks of trees, in February and March; but the female, perfectly apterous, is rarely met with. *A.*

Æscularia is generally found on palings in March, and its peculiar elongate-triangular appearance, with the equal sides produced, may remind a young mathematician of the 'pons asinorum'; the female of this species, though perfectly apterous, is well distinguished by its anal tuft. When *Æscularia* is past we see no more of this genus till the end of autumn; but when the leaves are fast falling, and wintry weather seems about to prevail, the aptly named *Defoliaria* tempts the entomologist abroad, and its long-legged, apterous, spider-like female is not unfrequent on the trunks of trees; at the same time the neater *Aurantia* appears, and his spouse, being graced with appendages meant for wings, is not unfrequently seen: both species continue to be met with up to Christmas, and worn stragglers may even be met with in the new year.

There are but two genera in the family:—

1. HYBERNIA. 2. ANISOPTERYX.

Genus 1. HYBERNIA.

Imago: antennæ of the male slightly pectinated; abdomen rather slender, never with an anal brush; wings of the male rather ample, entire, generally rounded; female wingless, or with short rudimentary wings.

Larva rather elongate, cylindrical; head round; feeding exposed on trees and shrubs.

Pupa subterranean.

We have five species of this genus, the males of which may be thus recognised:—

A. F.-w. brown. *H. rupicaprararia*.

AA. F.-w. whitish marbled with grey-brown. *H. leucophearia*.

AAA. F.-w. ochreous.

B. F. l. much angulated. *H. defoliaria*.

BB. F. l. nearly straight.

C. Hind-wings whitish. *H. progemmaria*.

CC. H.-w. tinted with pale orange. *H. aurantiaria*.

H. RUPICAPRARIA (Early). 1" 2'''—1" 3'''. F.-w. brown ; the f. l. curved, slightly darker ; the s. l. curved and slightly wavy, dark brown, followed by a slender pale grey band ; c. s. rather large, blackish. I, II.

Larva velvety, bluish green, on the back whitish green ; subdorsal line distinct, white ; front edge of each seg. dark green or brown-black (*Gu.*) On sloe, hawthorn, &c. V.

Bi. !! Brg. !! Brs. !! Da. ! Ed. ! Ex. ! Hu. K. ! Lw. ! Ly. ! M. !! N. Ne. Pl. ! Sc. ! St. !! Tn. !! Y. ! and near Glasgow.

H. LEUCOPHEARIA (Spring Usher). 1" 3'''—1" 5'''. F.-w. whitish marbled with brown and dark fuscous ; f. l. curved, blackish ; s. l. very sinuous, blackish, terminating on the middle of the inner margin, edged externally with a broad dark shade ; no c. s., but an indistinct c. l. II, III.

Larva yellowish green marbled with whitish, the whitish marks edged with dark green ; subdorsal line pale yellow (*Gu.*) On oak. V, VI.

Common everywhere : often abundant.

H. AURANTIARIA. 1" 6'''—1" 8'''. F.-w. reddish ochreous dusted with fuscous ; f. l. nearly straight ; s. l. slightly curved, both fuscous ; c. s. fuscous, rather indistinct ; a row of fuscous dots on hind-margin ; sometimes a fuscous shade near the hind-margin. X, XI.

Larva dull grey-green ; subdorsal line whitish ; head, anal seg. and legs ochreous (*Hub.*) On birch, oak, &c. VI.

Ba. Brg. ! Brs. Da. ! Ed. Ex. Ha. ! Hu. ! LD. ! Lw. ! Ly. M. !! Ne. Pm. Pl. Sc. St. ! Wt. ! Y. ! and near Glasgow.

H. PROGEMMARIA (Dotted Border). 1" 4'''—1" 7'''. F.-w. ochreous more or less tinged with reddish and dusted with fuscous ; f. l. broad, straight, bright fuscous ; s. l. slightly curved, slender, dark fuscous ; c. s. fuscous, rather indistinct ; a row of black dots on hind-margin. II, III.

Larva ochreous marbled with brown; subdorsal and spiracular lines brown (*Hub.*) On birch, oak, &c. VI.

Abundant everywhere.

H. DEFOLIARIA (Mottled Umbre). 1" 8"—1" 10". F.-w. pale ochreous marbled with ochreous-brown, dusted with fuscous; f. l. much angulated; s. l. with 3 distinct angulations; these lines recede from one another on the inner margin; c. s. dark fuscous; hind-margin spotted with fuscous. X, XI.

Larva reddish brown on the back; spiracular line broad, yellow with a red spot on each seg. (*Gu.*) On sloe, hawthorn, &c. V, VI.

Generally distributed and often common.

Genus 2. ANISOPTERYX.

Imago: antennæ of the male pubescent; abdomen slender; wings of the male entire; fore-wings with the tip pointed; hind-wings rounded; female entirely apterous, *with an anal brush*.

Larva cylindrical, with the lines distinct; head round; feeding on trees.

Pupa enclosed in an earthen cocoon.

A. ÆSCULARIA. 1" 3"—1" 6". F.-w. fuscous; f. l. curved, dark fuscous, internally paler; s. l. much serrated, with a tooth outwards near the costa, externally whitish; c. s. dark fuscous. III, IV.



Larva pale green marbled with darker; subdorsal line white; spiracular line pale (*Gu.*) On sloe, hawthorn, &c. V.

Common everywhere: often abundant.

Family XV. LARENTIDÆ.

Imago : antennæ of the male simple or pubescent, or even pectinated, but never plumose ; wings smooth, shining, not angular ; rarely dentate ; fore-wings very often marked with numerous wavy transverse lines.

Larva more or less elongate, not humped, not attenuated or only slightly so ; very often green with distinct lines ; head generally small and rounded ; feeding either exposed, or in folded leaves on trees and low plants, sometimes in the seeds of plants.

This extensive family comprises nearly the half of our British Geometrina, and from March to Christmas some of its representatives are constantly before us. Who is unacquainted with the 'Pugs?' And the genus *Eupithecia* alone furnishes nearly a fourth of our Larentidæ.

The earliest of this family to appear are *Larentia multistri-garia* and *Anticlea Badiata*, both of which, in forward seasons, appear in March, and are generally common ; in the following month the vanguard of the army of 'Pugs' make their appearance, and *Helveticaria*, *Irriguata*, *Denotata*, *Satyrata*, *Dodonæata*, *Abbreviata* and *Pumilata* are to be met with, though only the four last of these are to be considered common ; at the same period *Lobophora lobulata* may be found on palings and trunks of trees, and the local *L. polycommata* is on the wing ; the 'Garden Carpet' (*Melanippe fluctuata*) abounds everywhere, and *Anticlea derivata* is not scarce on palings ; *Phibalapteryx polygrammata*, a very local insect, appears at the end of April, and *Scotosia dubitata*, with its glossy purplish wings, is no rarity ; it comes rather freely to light. In the month of

May a much larger number of 'the Carpets' enter on the scene, and the woods and hedges are gradually enlivened with an increasing multitude of this family; the genus *Eupithecia* has at least fifteen representatives—*Venosata*, *Consignata*, *Pulchellata*, *Helveticaria*, *Pusillata*, *Irriguata*, *Indigata*, *Coronata*, *Plumbeolata*, *Satyrata*, *Castigata*, *Nanata*, *Vulgata*, *Assimilata* and *Exiguata*—of which the last seven are common; indeed, *Vulgata* is very abundant, and on heaths *Nanata* sometimes swarms. Then, in May, appear the pretty *Acasis viretata*, the 'May Highflyer' (*Ypsipetes impluviata*), and its 'big brother,' *Ruberaria*; at the same time 'the Common Carpet' (*Melanippe biriviata*) and the 'Silver Ground Carpet' (*M. montanata*) are of universal occurrence in lanes; the scarce *Anticlea Berberata* now appears, and the three pretty species, *Coremia propugnata*, *ferrugata* and *unidentaria*, seem generally common. In this month *Scotosia dubitata* is joined by its less glossy congener *S. certata*, and hybernated specimens of *Cidaria miata* are not unfrequently met with; some, from their fine condition, appear, indeed, to have passed the winter in the pupa state; *Cidaria russata*, *suffumata* and *silacea* complete the list of this family which appear in May.

In June the 'Twin-spot Carpet' (*Larentia didymata*) makes its *début*, and the stone rocks in Scotland have their perpendicular faces carpeted by *L. cæsiata*, and in some northern localities *L. salicata* may also then be met with; the 'Green Carpet' (*L. miaria*) seems generally distributed, and all the genus *Emmelesia* are to be met with, though some are mountain species and others extremely local. Our little friends 'the Pugs' again muster in full force; several of the May species still continue out; and, in addition, *Linariata*,

Centaureata, *Subumbrata*, *Pygmæata*, *Minutata*, *Absynthiata*, *Tenuiata*, the magnificent *Togata*, the orchard-frequenting *Rectangulata*, and *Debiliata* may be met with; the latter is, however, extremely local. The singular *Collix sparsata* occurs in the fenny districts, and 'the Seraphims' (*Lobophora sexalissata* and *hexapterata*) are not rare, though never very common; *Thera variata* abounds in fir woods, and the 'Purple-barred Carpet' (*Melanthia ocellata*) is common everywhere; the pretty *Albicillata* is more local, and *Hastata*, *Tristata*, *Procel-lata* and *Unangulata* have all a more or less restricted range; *Galiata* is met with more frequently, and *Biriviata* and *Montanata*, as in the previous month, are of general occurrence; the pretty *Anticlea sinuata* is not uncommon near Cambridge, and *A. rubidata* is found in several parts of the South. All the genus *Coremia* are on the wing in June, and *Camptogramma bilineata* becomes a perfect pest; the genus *Phibalapteryx* is represented by *Tersata*, *Lignata* and *Vitalbata*, and buck-thorn bushes frequently produce *Scotosia vetulata*; the pretty *S. undulata* now makes its appearance; of the genus *Cidaria*, *Picata*, *Corylata*, *Russata*, and *Silaceata* may be met with. This list is rather a long one, but no less than fifty-nine species in this one family are to be found during the balmy time of June; in July there are nearly as many (fifty-eight), of course including many species found also in June, but several make their *début* in the dog-days, such as *Larentia flavicinctata*, near mountain rills; *Eupithecia succenturiata*, *Haworthiata*, *pimpinellata*, *innotata*, *subnotata*, *subciliata*; *Thera coniferata*, *firmaria*; the 'July Highflyer' (*Ypsipetes elutata*); *Melanthia rubiginata*; *Melanippe rivata*; *Camptogramma gemmata*; *Scotosia Rhamnata*; *Cidaria sagittata*, *immanata*, *pru-*

nata, testata, populata, fulvata, pyraliata, dotata; and *Pelurga comitata*.

August, though not producing as many of this family as the two preceding months, has yet its fair share (twenty-eight), and the following species then appear for the first time:—*Oporabia autumnaria* and *filigrammaria* (both northern insects); *Eupithecia constrictata, expallidata* (both rare) and *sobrinata*, common among junipers; *Camptogramma fluviata*.

In September the abundant *Oporabia dilutata* appears, and in Perthshire *Phibalapteryx Lapidata*; *Cidaria miata* and *psittacata* seem widely distributed, and continue to occur during at least the first half of October, in which month *Thera juniperata* may be freely collected among juniper bushes by night, and *T. coniferata* has perhaps a second brood in this month; *O. dilutata* continues to be excessively abundant, and *Cheimatobia boreata* is not uncommon in birch woods; towards the end of the month the universally abundant *Cheimatobia brumata* flits along the leafless hedges at dusk, in search of the nearly apterous females, and continues to appear till quite the close of the year.

The genera in this family do not readily admit of tabulation; they are eighteen in number.

- | | |
|-----------------------|--------------------------|
| 1. <i>Cheimatobia</i> | 10. <i>Melanthia</i> |
| 2. <i>Oporabia</i> | 11. <i>Melanippe</i> |
| 3. <i>Larentia</i> | 12. <i>Anticlea</i> |
| 4. <i>Emmelesia</i> | 13. <i>Coremia</i> |
| 5. <i>Eupithecia</i> | 14. <i>Camptogramma</i> |
| 6. <i>Collix</i> | 15. <i>Phibalapteryx</i> |
| 7. <i>Lobophora</i> | 16. <i>Scotosia</i> |
| 8. <i>Thera</i> | 17. <i>Cidaria</i> |
| 9. <i>Ypsipetes</i> | 18. <i>Pelurga</i> |

Genus 1. CHEIMATOBIA.

Imago: antennæ of the male slightly pubescent; wings of the male entire, slender, silky; fore-wings rounded, or with the tip rather prolonged; female with very short rudimentary wings.

Larva short, cylindrical, a little attenuated at each end; feeding on trees, enclosed in a folded leaf.

Pupa in a slight cocoon, subterranean.

We have two species. *Boreata* differs from *Brumata* in all the wings being paler, and the fore-wings more pointed.

C. BRUMATA (Winter Moth). 1" 1''' — 1" 2'''. F.-w. greyish brown, with several indistinct, wavy, darker, transverse lines, and with a slightly darker indistinct central band; no c. s. X—XII.

Larva pale green or yellowish, sometimes tinged with blackish; subdorsal and spiracular lines yellowish white; head green (*Gu.*) On most trees. V.

Abundant everywhere.

C. BOREATA. 1" 2'''—1" 4'''. F.-w. pale grey with a slight ochreous tinge, with several darker, indistinct, wavy, transverse lines, and a slightly darker central band, followed by a pale band; no c. s. X.

Larva pale green; subdorsal and spiracular lines indistinct, yellowish; head brown (*Machin*). On birch. VI.

Brg. Da. Hu.!! L.D.! M.!! N. Y.; West Wickham.

Genus 2. OPORABIA.

Imago: antennæ of the male slightly pubescent; wings rather ample, silky, entire (in the female rather shorter, with the costa convex at the base).

Larva rather short, not attenuated, velvety green, paler beneath; feeding exposed on trees.

Pupa subterranean.

We have three species in this genus, all very closely allied, but *Filigrammaria* is much smaller, and *Autumnaria* is much more glossy than *Dilutaria*.

O. DILUTATA. 1" 4'''—1" 7'''. F.-w. pale grey or whitish grey, with numerous transverse, wavy, darker lines and bands; frequently a central pale band between two dark bands, the outer of which is followed by another pale band; c. s. indistinct, blackish. IX e, X.

Larva velvety green, beneath bluish white; incisions of the segs. yellow; spiracles orange, sometimes with red dorsal and lateral spots (*Gu.*) On oak, elm, &c. V.

Common everywhere: generally abundant.

O. AUTUMNARIA. 1" 4'''—1" 5'''. F.-w. more glossy than in *Dilutaria*, and the s. l. more angulated near the costa; f.-w. a trifle more pointed than in *Dilutaria*, and rather smaller. VIII.

LARVA UNKNOWN.

Ed. L.D. M. ! Pl. On birch trees.

O. FILIGRAMMARIA. 1" 1'''—1" 3'''. F.-w. narrower and more pointed than in *Dilutaria* (especially in the female), pale grey, with numerous transverse wavy lines, forming a darker central band (or at least the edges of one); c. s. black; h.-w. whitish, with pale grey hind-margin. VIII e, IX.

LARVA UNDESCRIBED. On heath.

Bi. Ed. M. !! Rests by day on the heath stems.

Genus 3. LARENTIA.

Imago: antennæ of the male pubescent or slightly pectinated; wings entire, rounded; fore-wings with the tip sometimes rather pointed, with numerous transverse wavy lines.

Larva elongate, attenuated in front; feeding on low plants (?)

We have seven species, which may be thus distinguished:—

A. F.-w. grey.

B. F.-w. with two slender orange bands. *L. flavicinctata*.

BB. F.-w. with no orange bands.

C. H.-w. whitish. *L. cæsiata*.

CC. H.-w. grey. *L. salicata*.

AA. F.-w. greyish brown.

D. Subt. l. white, preceded by a dark brown spot. *L. didymata*.

DD. Subt. l. greyish, preceded by an indistinct darker spot. *L. multistrigaria*.

AAA. F.-w. greenish.

E. Costa with no black spots. *L. olivata*.

EE. Costa with black spots. *L. miaria*.

L. DIDYMATA (Twin-spot Carpet). 1''—1'' 1'''. F.-w. pale greyish brown, with numerous transverse darker lines, and with a dark greyish band near the base and another in the middle; subt. l. serrated, whitish, a brown-black blotch occupying its 4th and 5th notches from the costa. VI, VII.

Larva pale grass-green; spiracular line narrow, white (*Sepp.*) On *Chærophylum*. IV.

Common everywhere: frequently abundant.

L. MULTISTRIGARIA. 1''—1'' 3'''. F.-w. yellowish grey dusted with dark grey; f. l. rather curved, indicated by geminated black dots; s. l. rather curved and slightly angulated, very indistinct, indicated by black dots; the space included is rather darker; c. s. indistinct, dark brown. III, IV.

Larva dark green, with lateral black-brown markings (*Shield in litt.*) On bedstraw. V, VI.

Bi.!! Brg. Brs.!! Da. Ed.! Ex.! Hu. K.! L.D.! Lw.!! M.!! N. Pl.!! Sc. Y.! Near Glasgow, and Dunoon.

L. CÆSIATA. 1'' 3'''—1'' 4'''. F.-w. grey, with numerous darker transverse lines, all more or less wavy, and with a central darker band, edged externally with a rather distinct whitish line; c. s. black. VI, VII.

Larva yellowish green, with a reddish triangular mark on the back of each seg., edged with black on the hinder segs.; spiracular line white (*Gu.*) On heath. VII.

Da. Ed.!! Hu.!! L.D.! M.!! Ne.; near Glasgow.

L. FLAVICINCTATA (Yellow-ringed Carpet). 1'' 3'''—1'' 5'''. F.-w. grey, with numerous darker, transverse, wavy lines; a central band, hardly perceptibly darker; c. s. blackish; the inner edges of the central band, the subt. l., and sometimes one or two slender bands near the base, yellowish; h.-w. greyer than in *Cæsiata*. VII.

Larva dull green, with a row of triangular dorsal spots,

reddish edged with white (*Freyer*). On *Saxifraga granulata* and *hypnoides*. V.

L.D.! (but local) Ne.; Perthshire.

L. SALICARIA. 1" 1'''—1" 2''' . F.-w. grey, with numerous dark grey transverse lines; a darker central band, containing a pale blotch towards the costa; the s. l. is edged indistinctly with whitish; subt. l. whitish; c. s. black. VI.

LARVA UNKNOWN.

Da. Hu. L.D.! M.! Ne. and Ben Donich.

L. OLIVARIA (Beech-green Carpet). 1"—1" 3''' . F.-w. dull olive-green; basal blotch and central band darker, each edged with whitish, the outer edge of the band most distinct; c. s. blackish, frequently in a paler blotch. VII.

Larva dingy brown (*Logan, Phys. Soc. Ed.*) X—IV. On *Galium*.

Ba. Brs.!! Da.! Ed. Ex. Ha.! L.D.!! Ly. M. Ne.! Near Glasgow.

L. MARIARIA (Green Carpet). 1" 1'''—1" 3''' . F.-w. rather pale green; basal line black, broadest on the costa; f. and s. l. black, forming triangular black spots on the costa; the space included is greyish green; all these lines are edged with whitish; c. s. grey, rather indistinct. VI, VII.

LARVA UNKNOWN.

Abundant everywhere.



Genus 4. EMMELESIA.

Imago: antennæ of the male simple; wings entire, rather thin, rounded; fore-wings with numerous wavy lines.

Larva short, attenuated at each end; feeding either exposed, or inside the seeds of plants.

Pupa enclosed in an earthen cocoon.

We have eight species, which may be thus recognised:—

A. F.-w. greenish, with a distinct wavy white band beyond the middle. *E. affinitata* and *E. Alchemillata*.

AA. F.-w. whitish, with pale grey markings. *E. albulata*.

AAA. F.-w. whitish, with dark grey markings.

B. A dark grey central band, of uniform intensity. *E. ericetata*.

BB. A dark grey central band, only distinct on the costa. *E. blandiata*.

AAAA. F.-w. whitish ochreous. *E. decolorata*.

AAAAA. F.-w. tawny and grey, with a dark central band, edged at each side with whitish.

C. The central band of nearly uniform width. *E. taniata*.

CC. The central band much narrower on the inner margin. *E. unifasciata*.

E. AFFINITATA (Rivulet). 1"—1" 1". F.-w. dull greenish, with numerous transverse wavy darker lines; central band hardly darker, followed by a wavy white band, which is intersected by a slender grey line; subt. h. wavy, whitish, only distinct on the costa. VI, VII.

Larva dirty white; head, anterior legs, plate of 2nd seg., and spiracles black (*Gu.*) In the seeds of *Lychnis*. VIII.

Ba. ! Bi. ! Brg. !! Brs. Da. ! Ex. ! K. !! L.D. Lw. ! M. ! N. Ne. Sc. ! St. ! Tn. ! Y.

E. ALCHEMILLATA (Small Rivulet). 9'''—10''' . F.-w. greyish brown with a very faint greenish tinge, with numerous transverse wavy darker lines, with 2 little whitish blotches



on the inner margin, one at the base, the other before the central band; beyond the central band is a wavy white band, intersected by a slender grey line; subt. l. rather distinct, wavy, white. VI, VII.

Larva greyish ochreous, brownish on the sides and between the segs.; spiracular line pale ochreous (*Hub.*) On nettle. IX.

Ba. ! Bi. Brg. Brs. Ca. !! Ct. Da. ! Ed. ! Ex. Hu. L.D. Lw. M. ! N. Ne. ! Pm. ! Sc. ! St. ! Y. Near Glasgow, and Ardrossan.

E. ALBULATA (Grass Rivulet). 9'''—10'''. F.-w. whitish, with numerous transverse wavy pale grey lines; beyond the middle is a rather distinct whitish band, intersected by a pale grey line; subt. l. pale whitish. VI.

Larva whitish green; dorsal line broad, dark green; spiracular line dark green; head and legs brown (*Freyer*). On *Rhinanthus crista-galli*, eating the seeds. VIII, IX.

Ba. Bi.!! Ct.! Da.!! Ed.! K.! L.D.! M.!! N. Ne.!! Pm.! Sc.! Y.! Oxford, and near Glasgow.

E. DECOLORATA. 1''—1'' 2'''. F.-w. pale greyish ochreous, with numerous transverse wavy darker lines; a slender white band on each side of the central band, the outer one interrupted; a brownish ochreous band before the hind-margin. VI, VII.

LARVA UNDESCRIBED. In the flowers of *Lychnis diurna*.

Ba.!! Bi.! Brg.! Brs. Da.! Ed. Ex.! K. L.D.! Lw. M.! Ne. Sc. St.! Wa. Y.! Oxford; near Glasgow; and Renfrew.

E. TENIATA. 9'''—11'''. F.-w. greyish ochreous, with dark grey basal blotch and central band; the s. l. angulated and rather indented, white, most conspicuous on the costa. VII.

LARVA UNKNOWN.

L.D.! (but local) Ne.

E. UNIFASCIATA. 9'''—10'''. F.-w. greyish brown; central band darker, edged on each side by a whitish band, each intersected by a slender grey line; a short black dash from the tip of the wing. VI—VIII.

LARVA UNKNOWN.

Brs. Ca. Ip. L.D. Lw. Ne.!! Conway and Ardrossan.

E. ERICETARIA. 7'''—9'''. F.-w. pale grey, with a darker basal blotch, and 3 darker bands, one immediately beyond the basal blotch; the second is the rather narrow central band; the third on the hind-margin, intersected by the whitish subt. l.; c. s. small, black. VI, VII.

LARVA UNKNOWN.

Ed.!! L.D.! (but local) St. Near Glasgow.

E. BLANDIATA. 9'''—10'''. F.-w. whitish, with a grey basal blotch; a grey central band, darker towards the costa, and a pale grey hind-margin, intersected by the whitish subt. l.; c. s. rather large, black. V, VI.

Larva green, with a dorsal row of reddish triangles; spiracular line yellowish green (*Freyer*). On eyebright. IX.

L.D. ! (but local); Rannoch; near Loch Long, and between Loch Goil and Loch Fyne.

Genus 5. EUPITHECIA.

Imago of small size; antennæ of the male pubescent; abdomen often crested, sometimes with a dark band on the first seg.; wings smooth, cloudy, concolorous, with numerous wavy slender lines; fore-wings more or less prolonged at the tip; hind-wings proportionately small; in repose the wings are spread out, and closely applied to the surface, on which the insect rests.

Larva rather short, stiff, often marked with dorsal lozenges; head small, rounded; feeding on trees or low plants.

Pupa slender, conical, pointed.

Of this genus we have no less than forty species, and many of these are so very much alike that their determination becomes a matter of considerable difficulty. The following may be given as an attempt at a tabular arrangement:—

A. F.-w. with a few neat black transverse lines.

B. F.-w. with three brown costal blotches. *E. consignata*.

BB. F.-w. with no brown costal blotches. *E. venosata*.

AA. F.-w. tawny and grey.

C. Central band narrow. *E. linariata*.

CC. Central band rather broad. *E. pulchellata*.

AAA. F.-w. greenish.

D. S. l. sharply angulated below the costa. *E. coronata*.

DD. S. l. slightly angulated below the costa. *E. rectangularata*.

DDD. S. l. indicated by dots. *E. debiliata*.

AAAA. F.-w. with a reddish band near the hind-margin.

- E. No c. s. *E. pumilata*.
 EE. C. s. very large, black. *E. togata*.
 EEE. C. s. black, but not large. *E. pernotata*.
 AAAAA. F.-w. white or whitish.
 F. A large grey costal blotch beyond the c. s.
 E. centaureata.
 FF. Costa and hind-margin clouded with grey.
 E. succenturiata (the pale variety).
 AAAAAA. F.-w. grey or brown, sometimes more or less
 tinged with ochreous or whitish.
 G. C. s. unrepresented.
 H. Fringes chequered. *E. pygmeata*.
 HH. Fringes unicolorous. *E. plumbeolata*
 and *Haworthiata*.
 GG. C. s. represented, but not conspicuous.
 E. satyrata, *nanata*, *subnotata*, *vul-*
 gata, *tenuiata*, *subciliata* and *sobri-*
 nata.
 GGG. C. s. conspicuous, black. *E. helveti-*
 caria, *egenaria*, *castigata*, *pimpinell-*
 lata, *pusillata*, *irriguata*, *denotata*,
 innotata, *indigata*, *constrictata*, *ex-*
 pallidata, *Absynthiata*, *minutata*,
 assimilata, *dodonæata*, *abbreviata*
 and *exiguata*.

In this section would also come the dark varieties of *succenturiata*.

E. VENOSATA (Netted Pug). 10'''—1''. F.-w. ochreous-grey, with 2 wavy whitish bands, 4 distinct black transverse lines, and several short black longitudinal lines, forming as it were a net-work. V, VI.

Larva pale bluish grey, beneath whitish; head and legs black (*Freyer*). In seeds of *Silene*. VII.

Ca. Da. Ha. Hu. Lw. N. St. Wt. Y.



E. CONSIGNATA. 10'''—11'''. F.-w. grey, with three distinct brown-grey blotches on the costa; in the middle one is the elongate black c. s.; a wavy whitish band follows the first blotch, and another precedes the third blotch. V.

Larva pale green, with a dorsal row of red triangular spots; spiracular line and between the seg. yellow (*Freyer*). On apple, &c. VI.

Ca. Ct. Lw. Pm.

E. LINARIATA (Beautiful Pug). 7'''—10'''. F.-w. ochreous; a tawny band near the base, another towards the hind-margin; central band dark grey, edged on each side with whitish; subt. l. whitish, intersected by two dark grey blotches. VI, VII.

Larva variable, pale green unspotted, or green spotted with black, or dark green, with black dorsal, subdorsal and spiracular lines (*Hub.*) In the seeds of *Linaria vulgaris*. VIII.

Ba. !! Bi. ! Brs. Ca. Ed. Ex. Ip. ! L.D. N. St. !

E. PULCHELLATA. 10'''—11'''. F.-w. pale ochreous, with a dull greyish tawny band near the base, and another towards the hind-margin; central band grey, edged on each side with whitish, and intersected by a wavy whitish line just beyond the black c. s.; subt. l. whitish ochreous, but very indistinct. V.

LARVA UNKNOWN.

Ed. Ex. Hu. L.D. Ly. M. ! Sc. Tn.; Harrowgate and Dunoon.

E. CENTAUREATA. 11'''—1''. F.-w. white, clouded with pale grey towards the hind-margin; c. s. curved, black, followed by a grey costal blotch; f. and s. l. wavy, grey, but rather indistinct. VI, VII.



Larva pale straw-yellow, with a row of dorsal red spots, and some oblique red streaks from these, running to a row of red subdorsal spots (*Hub.*) On *Centaurea*, groundsel, &c. IX.

Bi. Brs. ! Ca. ! Ed. Ex. Ha. Ip. K. ! Lw. M. ! N. Ne. Pm. ! Sc. ! St. ! Near Glasgow, and Ardrossan.

E. SUCCENTURIATA. 10'''—1''. Very variable. F.-w. whitish, with the costa and hind-margin grey, or tawny with

the costa and hind-margin brownish grey ; or greyish brown, with numerous transverse wavy lines, and a tawny blotch intersecting the s. l. ; c. s. always round, black. VII, VIII.

Larva greyish brown, darker on the back, with a row of ochreous dorsal lozenges (*Hub.*) On the seeds of yarrow and wormwood. IX, X.

Ba.!! Bi. Brs. Ca. Ct. Da.! Ed.!! Ex.! Ip. K. L.D.! Lw.! M. Ne. Pm. Sc. St. Y. and Ardrossan.

E. SUBUMBRATA. 10'''. F.-w. whitish grey ; along the costa and hind-margin darker grey ; subt. l. whitish ; c. s. barely perceptible ; h.-w. whitish, with the hind margin grey. VI.

LARVA UNKNOWN.

Ca.!! Ha. Y.

E. PERNOTATA. 11'''. F.-w. yellowish grey, with numerous wavy transverse paler lines : subt. l. distinct, whitish, preceded by a reddish band ; c. s. black. VII.

LARVA UNDESCRIBED. On golden rod.

A specimen bred by Mr. Doubleday, from a larva found by Mr. Machin.

E. PLUMBEOLATA. $7\frac{1}{2}$ '''—8 $\frac{1}{2}$ '''. F.-w. pale grey, with numerous transverse darker lines ; c. s. very indistinct (as a greyish spot) ; subt. l. hardly perceptible ; fringes grey, unspotted ; abdomen entirely grey. V, VI.

LARVA UNKNOWN.

Ba.!! Ca. K. L.D.! Lw.!! Sc. St. Tn.! and Ayrshire.

E. HAWORTHILATA. 8'''. F.-w. pale grey, with numerous transverse wavy darker lines ; beyond the middle a rather distinct whitish band ; subt. l. indistinct ; fringes unspotted ; abdomen pale grey, *tinged with orange on the first 3 segs.* VII.

LARVA UNKNOWN.

Bristol. Frequents *Clematis Vitalba*.

E. PYGMEATA. 7'''—8'''. F.-w. brownish grey, with some indistinct paler transverse lines ; subt. l. indistinct, with a conspicuous white spot towards the anal angle ; *fringes grey spotted with white.* VI.

LARVA UNKNOWN.

Ca. ! Da. ! Ed. Y. ! Near Glasgow, and Ardrossan.

E. HELVETICARIA. 8'''—10''' F.-w. grey-brown, with several wavy transverse darker lines; subt. l. rather indistinct, more conspicuous towards the anal angle; c. s. conspicuous, black; *fringe of hind-wings greyish ochreous spotted with dark grey; abdomen with slight crests on each seg.* IV, V.

Larva bright green (*Shield*). On juniper. IX, X.
Near Edinburgh.

E. SATYRATA. 9'''—10''' F.-w. pale grey, with numerous darker wavy transverse lines; subt. l. composed of a row of whitish dots; a more conspicuous white spot at the anal angle; c. s. blackish, often indistinct; h.-w. pale grey, darker towards the hind-margin. IV, V.

Larva whitish grey, with a row of dull red triangles, edged in front with brownish; spiracular line dull red (*Freyer*). On various plants — *Scabiosa succisa*, *Galium*, *Hypericum*, &c. VI.

Ed. !! Ha. !! L.D. ! Sc. Castle Eden-Dene, and near Glasgow.

E. EGENARIA. 1'' F.-w. rather pointed, grey, with numerous paler wavy transverse lines; subt. l. rather indistinct, precedes a dark grey border along the hind-margin; c. s. elongate, black; fringes spotted; u. s.—h. w. with a pale band, edged with blackish and divided by a blackish line. VII ?

LARVA UNKNOWN.

Has occurred in Wales and in the Isle of Wight.

E. CASTIGATA. 9'''—11''' F.-w. grey, with numerous pale grey wavy transverse lines; subt. l. whitish, scarcely more distinct at the anal angle; c. s. distinct, black; h.-w. whitish at the base, rather dark grey towards the hind-margin; c. s. grey. V.

Larva ochreous-grey; dorsal and spiracular lines reddish brown, and some oblique lines of the same colour on the sides (*Freyer*). On a great variety of plants. VIII, IX.

Bi. !! Ca. !! Ct. !! Da. ! Ed. ! Ha. !! Ip. !! K. !! Lw. ! M. !! Sc. St. ! Y. ! and near Glasgow.

E. PIMPINELLATA. 9'''—11'''. F.-w. grey, with numerous darker transverse lines; c. s. blackish, rather distinct; subt. l. whitish, with 2 conspicuous white spots, one below the middle, the other at anal angle; *this peculiarity is represented on h.-w.; centre of thorax, and two last seg. of abdomen, snowy white when alive.* VII, VIII.

Larva pale greenish white, with a red spot on the anal seg.; dorsal and spiracular lines slender, dark grey;—or dark red, pale ochreous beneath; spiracular line white (*Hub.*) On *Pimpinella Saxifraga.* IX?

Ip. Epping.

E. PUSILLATA. 9'''—10'''. F.-w. grey *with a faint ochreous tinge*; f. l. curved, dark grey; s. l. curved, dark grey; a geminated grey c. l. intersects the black c. s.; hind-margin dark grey; subt. l. whitish grey. V.

Larva green; dorsal and spiracular lines whitish (*Bork.*) On juniper (or fir?). VI.

West Wickham Wood, and in Devonshire.

E. IRRIGUATA. 9'''—10'''. F.-w. *whitish*; a dark grey band near the base; *a dark grey costal blotch above the black c. s.*; hind-margin dark grey, intersected by the whitish subt. l. IV, V.

LARVA UNKNOWN.

Ly. Ne.

E. DENOTATA. 10'''—11'''. F.-w. greyish, *tinged with ochreous along the inner and hind-margins*, with numerous wavy transverse lines; s. l. angulated below the costa; subt. l. whitish, much indented; c. s. *conspicuous, black.* IV, VIII.

LARVA UNDESCRIBED. Feeds on the blossoms of *Pimpinella Saxifraga.*

Deal; Isle of Wight?

E. INNOTATA. 9'''—10'''. F.-w. very pointed at the tip, pale brownish grey, with very indistinct darker transverse lines, forming an acutely angulated band, in the angle of which is the rather distinct black c. s. VII.

Larva yellowish green, with a row of reddish brown dorsal

lozenges, and some reddish brown lateral spots (*Gu.*) On mugwort and wormwood. IX.

Bi. Ca. Da. Ed. Ha. Ip. K. Lw. N. and Halifax, Huddersfield, Sheffield, and Dunoon.

E. INDIGATA. 8'''—9''' . F.-w. pale grey with a faint reddish tinge, with a few very indistinct wavy transverse lines ; c. s. distinct, black ; h.-w. *very pale grey, almost without markings*, but the c. s. grey. V, VIII.

* LARVA UNDESCRIBED. On fir.

Ed. M. ! Sc. ! Y. !

E. CONSTRICTATA. 9''' . F.-w. grey, with numerous dark grey wavy transverse lines, most distinct and broadest on the costa ; subt. l. pale grey, not whiter nor more conspicuous at the anal angle ; c. s. very distinct, black ; h.-w. pale grey ; hind-margin and central line dark grey ; subt. l. pale grey, much indented ; c. s. indistinct, grey. VIII.

LARVA UNKNOWN.

Portland, Da. and Ardrossan.

E. NANATA. 10''' . F.-w. dark grey, with numerous transverse wavy whitish lines ; subt. l. whitish, much indented, especially near the anal angle, *intersected by a white streak which runs to the tip of the wing* ; fringe whitish spotted with dark grey ; c. s. black, distinct. V.



Larva yellowish white ; dorsal line and between the segs. dull red ; spiracular line bright red, with some red streaks below it (*Freyer*). On heath. X.

Bi. ! Da. Ed. !! L.D. ! M. !! Sc. ! St. ! Y. ! Near Glasgow.

E. SUBNOTATA (Plain Pug). 10'''—11''' . F.-w. *ochreous-grey*, with numerous transverse darker wavy lines, and a narrow pale band beyond the middle ; subt. l. whitish, at the anal angle white ; c. s. rather dark grey, *but not very conspicuous*. VII.

* *Larva* green, more or less dull, dotted with white ; a row of dark green dorsal lozenges (*Gu.*) On *Chenopodium*. X, XI.

Brs. Ex. K.

E. VULGATA (Common Pug). $9\frac{1}{4}'''$ — $10'''$. F.-w. pale reddish brown, with numerous transverse darker lines; subt. l. whitish, forming a white spot at the anal angle; c. s. black, followed by some whitish scales. V, VI.

LARVA UNDESCRIBED. On golden rod, willow, &c.

Ba.! Bi.!! Ca.!! Ct.!! Da.! Ed.! Ex.! Ha.!! K.!! L.D.
Lw.! N. Ne. Sc.! St.! Tn.! Wt.! Y.! and near Glasgow.

E. EXPALLIDATA. $9'''$ — $10'''$. F.-w. pale brownish grey, with faint indications of darker basal, f., c. and s. l., only conspicuous on the costa; c. s. black; subt. l. whitish, white near anal angle. VIII.

LARVA UNKNOWN.

Has occurred on the coast of Wales.

E. ABSYNTHIATA. $10'''$ — $11'''$. F.-w. brownish grey with a faint reddish tinge, with 3 conspicuous black costal spots; c. s. black, distinct; subt. l. composed of whitish dots, but forming a conspicuous white spot at the anal angle. VI, VII.

Larva yellowish green, with a row of brown dorsal lozenges; subdorsal and spiracular lines canary-yellow (*Gu.*) On ground-sel, golden rod, *Artemisia*. VIII, IX.

Ba.! Bi.! Ct.! Da.! Ed. Ex.! Ha.! Lw.! M.! Ne.
Sc.! St.! Y. and near Glasgow.

E. MINUTATA. $9'''$ — $10'''$. Very like the preceding, but rather smaller and less reddish. VI.

Larva pale flesh-colour, with a row of brown dorsal triangles, intersected by the paler dorsal line and some brown lateral spots; spiracular line pale (*Gu.*) On heath. IX?

West Wickham, Ne. and near Glasgow. On heaths.

E. ASSIMILATA. $9'''$ — $10'''$. Resembles the two preceding, but f.-w. more rounded and of rather a smoky brown; subt. l. more conspicuous and whiter. V.

Larva pale yellowish green, darker on the back; dorsal line blackish; subdorsal line yellow, with a black spot above on the 5th to 8th segs. (*Gu.*) On black currant. IX?

Ct. Ha. Ip. Ne. Near Glasgow. In gardens.

E. TENUIATA. $8'''$ — $8\frac{1}{4}'''$. F.-w. pale grey; hind-margin darker, with numerous transverse wavy dark grey lines; c. s.

black, distinct; above it on the costa are *two reddish brown spots*; subt. l. pale grey, very indistinct. VI, VII.

Larva whitish grey, with a slight greenish tinge; dorsal and subdorsal lines grey; head and 2nd seg. brown-black (*Treitschke*). On willow catkins. III, IV.

Sc. Y. and Epping.

E. SUBCILIATA. 8'''—9'''. F.-w. ochreous-grey, with numerous darker transverse lines; c. s. grey; hind-margin dark grey, intersected by a paler subt. l.; *antennæ of the male slightly ciliated*. VII.

LARVA UNKNOWN.

Da. ! Ha. ! Ip. !

E. DODONEATA. 9'''—10'''. F.-w. rather short, rounded, whitish grey, with numerous transverse wavy dark grey lines; the black c. s., placed at the edge of one of these dark grey lines, is placed in a conspicuous whitish blotch; subt. l. whitish, more distinct at anal angle. IV.

LARVA UNDESCRIBED. On oak. VI.

Ip. K. Wt. Y. and *Lewisham* !

E. ABBREVIATA. 10'''—11'''. F.-w. long, with the tip prolonged, ochreous-grey, with numerous transverse wavy dark grey lines; the paler ground-colour forms a broad central band, intersected by 2 short black lines, and beyond it a slender angulated band; subt. l. rather indistinct; c. s. grey. IV.

Larva yellowish green dotted with whitish, reddish between the segs.; a row of dorsal brown-black lozenges edged with yellowish, and brown-black spots on the sides (*Gu.*) On oak. VI.

Bi. Ca. Da. ! Ex. ! K. L.D. ! Lw. Ly. M. ! Ne. Pm. Sc. St. Wt. Y. !

This species, having a more elongate appearance than most of its congeners, was perversely named the '*Short Pug*.'

E. EXIGUATA. 10'''—11'''. F.-w. pale grey, with numerous transverse wavy darker lines; beyond the middle a pale band, *from which two pale grey blotches intersect the dark grey hind-margin*; subt. l. pale grey, whitish towards the anal angle; c. s. distinct, black; between it and the pale band the veins are blackish. V, VI.

Larva dark green; dorsal and spiracular lines dull red (*Freyer*). On hawthorn. IX.

Ca. ! Ct. ! Da. ! Ed. !! Ex. ! Ha. ! Ip. ! K. ! Lw. ! M. ! Ne. St. ! Y. ! and Bothwell.

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E. SOBRINATA. 10'''—10½'''. F.-w. grey with a faint reddish tinge, with numerous transverse darker wavy lines; c. s. black, but indistinct, placed on the dark central line; a rather conspicuously pale band beyond it; subt. l. wavy, pale grey, more distinct at the anal angle. VIII, IX.

Larva variable: green, with dark green dorsal lines; spiracular line and incisions white;—or reddish brown, with a row of dark brown triangles; spiracular line whitish, with a row of brown spots below (*Freyer*). On juniper. V.

Ed. !! Ha. ! L.D. M. Ne. ! St. and Dover? Near Glasgow.

E. TOGATA. 11'''—1''. F.-w. pale ochreous-grey, with a reddish band near the base and another before the subt. l.; f. and s. l. wavy, black; c. s. *large, black*. VI.

LARVA UNKNOWN.

Black Park, in Bucks; Da. Ha. Richmond, Yorkshire; and Marden, near Devizes.

P. PUMILATA. 8'''—9'''. F.-w. whitish grey, with a reddish tinge; f. and s. l. remarkably distinct, the latter followed by a *neat slender white band*; c. s. hardly perceptible; hind-margin rather *dark reddish grey*; subt. l. indistinct; h.-w. pale grey, darker towards the hind-margin, and with a conspicuous angulated central dark grey line. IV.



Larva pale yellowish green or whitish; dorsal and subdorsal lines dark green or reddish violet; spiracular line pale (*Gu.*) On *Clematis*, *Convolvulus*, &c.

Ba. !! Bi. !! Brs. ! Ca. ! Ex. ! Ip. L.D. ! M. ! Sc. ! Near Glasgow.

E. CORONATA (the V Pug). 7½'''—9'''. F.-w. pale dull green; f. l. distinct, angulated, dark grey, followed by a slender greenish grey band; s. l. very distinct towards the

costa and sharply toothed, preceded by a dark grey costal blotch; c. s. imperceptible. V, VI.



Larva pale green; a row of dorsal reddish triangles edged with black; spiracular line whitish (*Freyer*). On *Clematis*, &c. VIII, IX.

Ba. Brs. Ex. K. Lw. Ly. Sc.

E. RECTANGULATA (Green Pug). $9\frac{1}{4}''' - 10\frac{1}{4}'''$. F.-w. green; f. l. much curved, dark grey, approaching the base on the inner margin; s. l. dark grey, rather angulated towards the costa; the space included is dull grey-green; c. s. blackish; hind-margin clouded with grey, with a pale green subt. l. VI, VII.

Larva green; dorsal line reddish brown; head and legs black (*Gu.*) On apple, pear, &c. IV, V.

Bi. Brs.!! Ca.! Ct.! Da.! Ed.! Ex.! Ha.! Hu.! K.! L.D. Ly.! M.!! N. Ne. Sc.! St.! Tn.! Wa.! Wt.! Y.! and near Glasgow.

This species is at times very injurious to the apple crop, the larva feeding in the young buds of the apple trees, devouring the stamens and pistils, and protecting itself by tying together the petals. Horticulturists who wish to get rid of this little pest are recommended to examine every bud which seems lazy in opening, as it will probably be found to conceal one of these mischievous larvæ.

E. DEBILIATA. $8''' - 9'''$. F.-w. very pale greenish; central band of nearly uniform width, slightly darker; hind-margin clouded with grey; f. and s. l. indicated by black dots; c. s. black. VI.

LARVA UNKNOWN.

In Devonshire.

Genus 6. COLLIX.

Imago: antennæ of the male simple; palpi longer than the head; abdomen longer than the wings; wings concolorous;

fore-wings oblong, subfalcate, with a tuft of grey scales on the disk ; hind-wings deeply dentate.

Larva structure not recorded.

We have but one local species in this genus.

C. SPARSATA. 1". F.-w. brown, with numerous wavy transverse darker lines ; c. s. black, a dark costal spot above it ; subt. l. whitish, white at the anal angle. VI.

Larva pale green, with 5 white dorsal lines, and a broad yellow spiracular line (*Treitschke*). On *Lysimachia vulgaris*.

Cambridge.

Genus 7. LOBOPHORA.

Imago : antennæ of the male simple ; wings entire ; fore-wings with the tip rather prolonged, with numerous transverse lines ; hind-wings small, those of the male at the base with an appended lobe (fringed and very conspicuous in the first two species) ; hind-wings covered in repose.

Larva of moderate length, smooth, velvety, not attenuated ; anal points projecting ; feeding exposed on trees or shrubs.

Pupa subterranean.

Of this genus we have five species, which may be thus distinguished :—

A. F.-w. dull green. *L. viretata*.

AA. F.-w. greyish ochreous, with brown central band. *L. polycommata*.

AAA. F.-w. grey.

B. C. s. black, in a dark costal blotch. *L. sexalisata*.

BB. No dark costal blotch. *L. hexapterata*.

BBB. No c. s. *L. lobulata*.

L. SEXALISATA (Small Seraphim). 10''—11''. F.-w. whitish grey with a slight ochreous tinge ; a dark grey wavy band between the basal blotch and the f. l., and a dark grey band towards the hind-margin, intersected by the wavy whitish subt. l. ; a third dark grey band lies in the centre of the wing, its costal half being blackish ; in it is a distinct black c. s. VI.

Larva pale whitish green, with the dorsal, subdorsal and spiracular lines white; head darker green; 2 small points project from the anal seg. (*Freyer*). On sallow, willow, &c. VIII, IX.

Brg. Ca. Ha. L.D. Lw. Ly. M. St. Wt. Y.

L. HEXAPTERATA (Seraphim). 1" 1'''—1" 2'''. F.w. pale grey with a very faint ochreous tinge; a blackish band between the basal blotch and the f. l.; the hind-margin much clouded with blackish; the central portion of the wing comparatively pale; c. s. a black dot. VI.

Larva beautiful green; a sulphur line on each side, and 2 sulphur points project from the anal seg.; head with 2 yellow points (*Treitschke*). On sallow and aspen. VI.

Brg. Brs. Ca. K. Lw. Ne. Sc. St. and Sheffield!

L. VIRETATA. 11'''—1" 1'''. F.w. dull olive-green, with several transverse wavy blackish lines; a central greyish band, and a slender interrupted greyish band towards the hind-margin. V, VI.

Larva dull yellow, spotted with orange on the back (*Hub.*) On privet. VIII, IX.

Brg. Ca. L.D. Lw. Ly. Ne.

L. LOBULATA. 1" 1'''—1" 3'''. F.w. pale grey, sometimes with a slight greyish tinge, with several wavy serrated transverse darker lines, of which 2 on each side of the middle form the edges of 2 slightly darker bands, most distinct on the costa; c. s. a black line. IV.

Larva dark green, with a broad yellowish spiracular line (*Hub.*) On sallow. VIII.

Brs. Ca. Ed. Ex. Ip. L.D.! Lw. M.!! N. Ne. Y.! Gourrock and Dunoon.

L. POLYCOMMATA. 1" 3'''—1" 5'''. F.w. greyish ochreous; basal blotch slightly darker; f. l. angulated; s. l. angulated and slightly indented; the space included is brown, except a large blotch on the costa and a small one on the inner margin of the pale ground-colour. IV.

Larva dark green, paler at the sides; spiracular line pale yellow (*Hub.*) On honeysuckle. VIII.



Brg. L.D. "Common, but local," Lw.

Genus 8. THERA.

Imago: antennæ of the male pubescent; (or, in *Firmaria*, slightly pectinated); wings entire, silky or satiny; fore-wings with a darker central band, but with very few lines; hind-wings moderately developed, rounded, with hardly any markings.

Larva rather short, smooth, a little swollen in front, with well-defined lines, the anal points very distinct; living on the Coniferæ.

Pupa green or reddish orange (*Firmaria*), in a silken cocoon amongst leaves:—

Of this genus we have four species, which may be thus separated:—

A. F.-w. pale grey, with ochreous-brown central band. *T. firmaria*.

AA. F.-w. pale grey, with dark grey central band, intersected by the indentations of the s. l. *T. juniperata*.

AAA. F.-w. greyish brown, with darker central band.

B. F. l. nearly straight. *T. coniferata*.

BB. F. l. angulated. *T. variata*.

T. JUNIPERATA. 11''' — 1'' 1''' . F.-w. pale grey; basal blotch darker; f. l. much angulated; s. l. angulated and very much indented, the space included dark grey; a black streak towards the tip of the wing. X.

Larva apple-green, whitish above, darker at the sides; sub-dorsal line broad, lemon-yellow, extending along the anal point; spiracular line dark reddish purple, edged beneath with white (*Gu.*) On juniper. VII, VIII.

Sanderstead, Mickleham, and near Glasgow.

T. CONIFERATA. 10'''—11'''. F.-w. greyish brown; basal blotch darker; f. l. nearly straight; s. l. slightly angulated, not indented; both edged with whitish, the space included dark brown. VII (and X?)

Larva bright green; dorsal line bluish white; subdorsal line white; spiracular line white, edged above with red (*Wilson in litt.*) On juniper. VI.

Da. Ed. L.D. Ne. and near Glasgow.

T. VARIATA. 1''—1'' 4'''. F.-w. greyish brown; the basal blotch darker; f. l. slightly angulated; s. l. slightly angulated and slightly indented, the space included dark greyish brown. VI—IX.

Larva grass-green; dorsal and spiracular lines white; prolegs pink (*J. Greene in litt.*) On fir. III—V, VII.

Common everywhere.

T. FIRMARIA. 1''—1'' 3'''. F.-w. pale grey; basal blotch greyish ochreous; f. l. much angulated and slightly indented; s. l. slightly angulated and slightly indented, the space included ochreous-brown. VII.

Larva dull grass-green; spiracular line yellow; head brown; prolegs brown, with a pink streak (*J. Greene in litt.*) On fir. IV.

Bi. Brg. Ed. Ex. Ip. L.D. Ly. ! M. !! Pm. ! Sc. Wa. ! Y. and near Paisley.

Genus 9. YPSIPETES.

Imago: antennæ of the male simple; abdomen rather stout; wings entire, thick, with variegated fringes; fore-wings oblong, the hind-margin convex; with transverse bands rather than lines; hind-wings silky, almost without markings.

Larva rather short, cylindrical, thick, with numerous distinct lines; feeding exposed on trees or shrubs.

Pupa amongst leaves.

Of this genus we have three species, all very variable, but most of the varieties may be generally distinguished by the following characters :—

A. A pale blotch in the middle of the dark band before the subt. l. *Y. elutata*.

AA. No pale blotch in the dark band before the subt. l. *Y. impluviata* and *ruberaria*. The latter is best distinguished from *impluviata* by its larger size, more distinct apical streak, and longer palpi.

Y. RUBERARIA. 1" 4'''—1" 5''' . F.-w. grey, with several darker transverse lines, forming a broad dark band before the middle and another beyond the middle, more or less tinged with reddish ; c. s. elongate, grey ; an *apical black streak* beyond the 2 or 3 black subapical dashes. V, VI.

Larva dirty white or greyish, rather hairy (*Machin*). In curled-up leaves of sallow and willow.

Ba. Bi. ! Ca. !

Y. IMPLUVIATA (May Highflyer). 1" 1'''—1" 2''' . F.-w. greenish grey, with several darker transverse lines, 2 of which, near the middle, include a pale band, in which is the elongate black c. s. ; towards the tip of the wing are 2 or 3 short, black, longitudinal streaks. V.

Larva yellowish ; the dorsal, subdorsal and spiracular lines bluish green (*Hub.*) On alder. IX.

Ba. Bi. ! Brg. ! Ca. ! Ct. !! Da. Ed. Ex. ! Ha. !! Hu. !!! L.D. ! Ly. ! M. !! Ne. Pm. ! Sc. ! St. Y. !

Y. ELUTATA (July Highflyer). 1" 2'''—1" 4''' . F.-w. greenish grey, with several darker transverse lines and bands ; one of these bands near the hind-margin is interrupted in the middle by a pale spot ; no c. s. VII, VIII.

Larva dull yellow ; subdorsal line pale yellow ; below are 2 similar smaller lines ; spiracular line pale, with a ferruginous spot in the middle of each seg. (*Gu.*) On sallow, alder, bilberry, &c. V, VI.

Abundant everywhere.

Genus 10. MELANTHIA.

Imago: antennæ of the male slightly pubescent; thorax crested where it joins the abdomen; wings entire, white, with few lines, at the base always dark.

Larva elongate, attenuated in front; head small, rounded; feeding exposed.

Pupa contained in an earthen cocoon or between leaves.

We have three species of this genus, which may be thus distinguished:—

A. central portion of f.-w. white. *M. albicillata*.

AA. F.-w. with a dark central band.

B. The band interrupted below the middle. *M. rubiginata*.

BB. The band entire. *M. ocellata*.

M. RUBIGINATA. 11''' — 1'' 1'''. F.-w. white or pale grey; basal blotch greyish brown; a greyish brown central band, generally interrupted below the middle; hind-margin clouded with grey or dark grey; c. s. black. VII, VIII.

Larva pale green; dorsal line dark green; subdorsal line yellowish green; 2 small points from the anal seg. (*Freyer*). On alder. VI.

Ba. Brg.! Ca.! Ct.! Da.! Ed. Ex. Ha.! K.! L.D.! Ly. M.! N. Ne.! Sc. St. Tn.! Y.! Near Glasgow, and Argyleshire.

M. OCELLATA (Purple-bar Carpet). 1'' 1''' — 1'' 2'''. F.-w. white; a purplish brown basal blotch, and a purplish brown central band between the 2 lines, which are slightly indented; c. s. large, black; towards the base and tip of the wing are some pale lead-coloured markings. VI, VII.



Larva brown, with white lateral lines (*Bork.*) On bed-straw. VI, IX.

Common everywhere.

M. ALBICILLATA. 1'' 2'''—1'' 4'''. F.-w. white; basal blotch dark purplish grey, followed by a tawny band terminating with the f. l.; s. l. angulated and slightly indented, followed by a purplish grey blotch on the costa; hind-margin clouded with grey; c. s. grey, sometimes indistinct. VI, VII.

Larva green, with triangular red spots on the back of the 4th to 10th segs.; spiracular line white (*Hub.*) On bramble and raspberry. VIII, IX.

Ba. Brg. Brs. Ca. ! Da. *Ha.* L.D. Lw. Ly. M. !! N. Ne. Pm. Pl. Sc. ! Tn. ! Y. !

Genus 11. MELANIPPE.

Imago: antennæ of the male generally simple (in *Montana* slightly pectinated); abdomen often with a double row of black spots; wings entire, white and black, with a whitish band on all the wings beyond the s. l., generally intersected by a grey line or row of spots.

Larva rather short, cylindrical, a little attenuated in front; head rounded; feeding on trees or low plants.

Pupa in an earthen cocoon.

This genus contains nine species, which may be thus distinguished:—

A. Central band forms only a costal blotch.

B. A conspicuous white blotch in the dark hind-margin.

M. procellata.

BB. No white blotch in the hind-margin. *M. fluctuata.*

AA. Central band interrupted below the middle. *M. hastata.*

AAA. Central band entire.

C. Hind-margin scarcely clouded with darker.

D. Central band broad. *M. galiata.*

DD. Central band narrow. *M. montanata.*

CC. Hind-margin distinctly dark.

E. Fringes spotted with white. *M. tristata.*

EE. Fringes not spotted with white.

F. S. l. with a prominent central point. *M. unangulata.*

FF. S. l. with no prominent central point.

K 2

G. Central band broad. *M. rivata*.

GG. Central band narrow. *M. biriviata*.

M. HASTATA (Argent and Sable). 1" 3'''—1" 6'''. F.-w. white prettily marbled with black; a black basal blotch; a broad interrupted black band rather before the middle; an interrupted black band just before the black hind-margin. VI, VII.



Larva cinnamon-brown or black-brown; dorsal line dark brown; spiracular line formed of a series of horseshoe-shaped yellow spots (*Treitschke*). On birch (in rolled-up leaves): gregarious. VIII.

Ct. Hu. L.D. Lw. Ly. M.! N. Ne. Sc. St. Tn. Y. Dunoon, Arran, and Ben Lomond.

M. TRISTATA (Small Argent and Sable). 11'''. F.-w. dark grey, with 2 wavy white bands, each intersected by a row of black dots; central band greyish black; c. s. black. VI, VII.

Larva ochreous-brown; dorsal and spiracular lines brown (*Treitschke*). On bedstraw. VIII, IX.

Ed. !! Hu. ! L.D. N. Ne. ! St.

M. PROCELLATA. 1" 2'''—1" 4'''. F.-w. white, with several transverse wavy darker lines; basal blotch greyish brown; the costal half of a central band greyish brown; hind-margin brownish, in the middle with a large white blotch. VI, VII.

LARVA UNKNOWN.

Brg. ! Brs. ! Ca. ! Ip. ! Lw. ! N.

M. UNANGULATA. 1"—1" 1'''. F.-w. grey, with a rather broad greyish brown central band, the inner edge of which is very much curved; beyond is a distinct white band, intersected by an indistinct ochreous line; hind-margin greyish brown; c. s. black. VI, VII.

LARVA UNKNOWN.

Ba. ! Bi. Brg. Ex. ! Ip. ! Lw. M. !! N. Pm. St.

M. RIVATA (Wood Carpet). 1" 1'''—1" 2'''. F.-w. grey, with a broad (much broader than in the following species) dark grey central band, bordered on each side by a white band, each intersected by a slender grey line, but that in the outer band very indistinct, except just at the costa; hind-margin grey, *not with a brownish tinge*. VII.

Larva greenish grey, on the back more green, with a row of dark green lozenges, edged with white on the 5th to 9th segs.; spiracular line yellowish (*Freyer*). On bedstraw. IX.

Ba. Brg. ! Brs. Ip. ! L.D. Lw. M. Pm. ! Tn. !

M. BIRIVIATA (Common Carpet). 1" — 1" 1'''. F.-w. grey; central band dark grey, edged on each side by a white band, each of which is intersected by a slender grey line, most distinct in the narrower interior band; hind-margin greyish brown. V—VII.

Larva ochreous-grey; on the back 5 grey lozenges edged with black, each enclosing 2 white dots, and followed by a white spot (*Freyer*). On bedstraw. VI, IX.

Abundant everywhere.

C. MONTANATA (Silver Ground Carpet). 1" 1''' — 1" 2'''. F.-w. whitish, with a pale ochreous-brown blotch at the base, and a *pale brownish* central band, comprising a whitish blotch towards the costa, in which is placed the black c. s.; hind-margin with some cloudy greyish markings. V—VIII.

Larva dull whitish, with several grey-brown longitudinal lines; spiracular line white (*Treitschke*). On primrose. IV, V.

Abundant everywhere.



H. GALIATA. 1" — 1" 2'''. F.-w. white, with a grey blotch at the base, and a greyish brown central band between the 2 lines, of which the f. l. is curved and slightly serrated, the s. l. angulated and much serrated; on the costa before

the tip is a small dark grey blotch, and another a little larger above the middle of the hind-margin; c. s. small, black. VI, VII.

Larva brownish grey; dorsal line black; subdorsal line white, with a rosy tinge; spiracular line reddish grey (*Gu.*) On bedstraw. VII.

Bi. ! Brg. Brs. Da. Ed. Ex. Hu. L.D. Lw. ! Ly. ! M. N. Pl. !! Sc. Y. and the Cumbræes.

C. FLUCTUATA (Garden Carpet). 11'''—1''. F.-w. whitish, with numerous wavy transverse greyish lines; a dark grey blotch at the base, and a dark grey blotch from the costa forming the first half of a central band, and a smaller dark grey blotch on the costa towards the tip; c. s. black. IV—VIII.

Larva yellowish grey, marbled with blackish brown on the back; spiracular line ochreous-grey (*Hub.*) On horse-radish, cabbage, &c. VI—IX.

Abundant everywhere.

Genus 12. ANTICLEA.

Imago: antennæ of the male simple; wings entire; forewings rather pointed; central band generally pale.

Larva: either elongate, rolling up the anterior seg.; or short, doubling itself up; feeding exposed on rose, barberry or bedstraw.

Pupa in an earthen cocoon.

Of this pretty genus we have five species, which may be readily recognised.

A. Central band whitish.

B. A black streak from costa to middle of hind-margin. *A. derivata*.

BB. No black streak to middle of hind-margin. *A. sinuata*.

AA. Central band yellow. *A. badiata*.

AAA. Central band grey.

C. A dark grey apical streak. *A. berberata*.

CC. No apical streak. *A. rubidata*.

A. SINUATA. 1''—1'' 2'''. F.-w. whitish grey, with a blackish blotch at the base; a slender blackish band beyond

the f. l., which is curved and blackish ; a grey costal blotch before the much-indented s. l. ; this is followed by a reddish brown band attenuated towards the inner margin ; c. s. greyish, very indistinct. VI.



Larva bright yellow on the back ; subdorsal line broad, purplish, edged beneath with greenish yellow (*Hub.*) On bedstraw. VII, VIII.

Ca. !

A. RUBIDATA. 1''—1'' 2'''. F.-w. reddish grey ; basal blotch dark brown ; f. l. angulated near the costa, then nearly straight, followed by a dark grey band ; s. l. nearly straight at the costa (where it is preceded by a dark grey blotch), then very wavy ; c. s. blackish ; the spaces before the f. l. and beyond the s. l. are most distinctly reddish. VI, VII.

Larva pale green or greyish ; a dorsal line on the first 2 and last 3 segs. ; a blackish net-work on the middle segs., in which is a black triangle (*Treitschke*). On bedstraw. VIII, IX.

Brg. Brs. Ca. ! Ct. Ex. Lw. M. N. Ne. Pm. St. Tn.

A. BADIATA. 1'' 3'''—1'' 4'''. F.-w. ochreous-brown with a slight reddish tinge ; f. l. angulated near the costa, but otherwise almost straight, followed by a slender dark band ; s. l. slightly angulated and very wavy, preceded by a rather dark band, most distinct towards the costa ; between these 2 bands is the palest portion of the wing, greyish ochreous, with a small brownish c. s. ; in the middle of the hind-margin is a small pale ochreous spot. III, IV.

Larva green, marbled with blackish on the back ; spiracular line whitish green ; spots white ; head yellowish brown (*Treitschke*). On rose. VI.

Common everywhere.

A. DERIVATA. 1'' 1'''—1'' 3'''. F.-w. pale grey with a delicate purplish tinge ; a broad central band nearly white ; the f. l. is distinctly angulated, and is followed by a dark grey band ; the s. l. is very much angulated, going off obliquely almost to the middle of the hind-margin, then coming back

with very severe indentations to the inner margin ; its upper half is distinctly blackish. IV, V.

Larva pale green ; the incisions of the segs. canary-yellow ; head and dorsal line on 3 first segs. red (*Hub.*) On rose and honeysuckle. VII.

Ba. ! Bi. Brg. Brs. ! Ca. ! Ct. Da. ! Ed. Ex. Hu. K. ! L.D. Lw. Ly. ! M. N. Ne. Sc. ! St. Wt. Y. ! and Ayrshire.

A. BERBERATA. 1'' 2'''. F.-w. pale grey with a slight rosy tinge, darker towards the base ; f. l. slightly angulated and slightly curved, followed by a slender brownish band, and then by a pale grey band ; s. l. much angulated and indented, preceded by a brownish band, darkest and most distinct towards the costa. V, VIII.

Larva pale yellowish brown, spotted with black on the back ; spiracular line pale greyish ochreous, sometimes with a rosy tinge (*Hub.*) On barberry. VI.

Ca. !

Genus 13. COREMIA.

Imago : antennæ of the male pubescent, sometimes pectinated ; abdomen generally marked with a double row of dark spots ; wings entire, rather rounded.

Larva elongate, attenuated in front ; feeding on low plants.

Pupa subterranean.

We have five species of this genus, which may be easily recognised.

A. Central band narrow. *C. munitata* and *propugnata*.

AA. Central band broad.

B. C. s. indistinct.

C. Band black ; base ochreous. *C. unidentaria*.

CC. Band reddish ; base reddish ochreous. *C. ferrugata*.

BB. C. s. black, distinct. *C. quadrifasciaria*.

C. MINUTARIA. 1'' 1'''. F.-w. pale grey, reddish grey at the base ; a dull reddish grey central band ; hind-margin dull grey, with no reddish tinge ; A GREY STREAK AT THE TIP OF THE WING. VI, VII.

LARVA UNDESCRIBED (very similar to that of *M. montanata*, Wilson in litt.)

Da. Ed. L.D. "common, but local." M. and Sc. ! Arran and Luss.

C. PROPUGNATA. 11'''—1" 1'''. F.-w. pale grey, reddish grey at the base, with a reddish grey central band, darker towards the base ; a reddish grey spot on the costa before the tip, and the hind margin MORE OR LESS CLOUDED WITH REDDISH ; NO APICAL STREAK. V, VI.

Larva reddish grey, with a row of pink triangles on the back ; spiracular line pale yellowish grey (*Sepp.*) On cabbage. IX.

Ba. !! Bi. ! Brg. ! Brs. ! Ca. ! Da. Ex. ! K. ! L.D. ! Lw. ! Ly. ! M. !! N. Ne. Pm. ! Sc. St. Tn. ! Y. Renfrew and Argyleshire.

C. FERRUGARIA. 10'''—1''. F.-w. pale grey, reddish grey at the base, and with a broad REDDISH GREY central band ; the latter is preceded and followed by a slender ochreous band. V, VI.

Larva brownish grey, with an interrupted brownish dorsal line and a brown line on the sides (*Bork.*) On chickweed. VI, IX.

Common everywhere : generally abundant.

C. UNIDENTARIA. 11'''—1''. F.-w. OCHREOUS-grey, dark reddish grey at the base, and with a broad BLACKISH central band. V, VI.

LARVA UNDISTINGUISHED FROM THAT OF THE PRECEDING SPECIES.

Ba. !! Bi. !! Brg. ! Brs. !! Ca. !! Ex. !! Ha. K. ! L.D. ! Lw. Ly. M. ! N. Pm. ! St. !! Tn. ! Wt. Y. ! Glasgow, Argyleshire and Ayrshire.



C. QUADRIFASCIARIA. 1" 1'''—1" 2'''. F.-w. grey, posteriorly greyish ochreous, with a broad dark grey central band ; s. l. angulated and wavy, edged with whitish ; c. s. oblong, black. VI e, VII.

Larva yellowish grey marbled with brown ; spiracular line blackish, sometimes interrupted (*Hub.*) On low plants, hawthorn, &c. IV, V, VIII.

Ca. St. ! and Guildford.

Genus 14. CAMPTOGRAMMA.

Imago : antennæ of the male simple ; abdomen with no dorsal spots ; wings broad, entire, with numerous very fine transverse lines ; tip of fore-wings rather falcate ; hind-wings rather dentate.

Larva of moderate length, not attenuated ; head small, rounded ; feeding on low plants.

Pupa subterranean.

In this genus we have three species, readily distinguished by their different ground-colours.

C. BILINEATA (Yellow Shell). 1"—1" 3'''. F.-w. YELLOW, with numerous transverse wavy darker lines ; f. l. much indented, white, sometimes followed by a dark band ; s. l. slightly angulated and indented, white, preceded by a darker band,—sometimes the band is dark brown and rather broad ; c. s. small, yellowish brown. VI—VIII.

Larva greenish white ; dorsal line dark green ; subdorsal line white ; spiracular line whitish (*Freyer*). On grass, &c. IV.

Abundant everywhere.

C. FLUVIATA. 10½'''. F.-w. OCHREOUS ; f. and s. l. wavy, whitish ; c. s. black, placed on a narrow ochreous-grey central band ; subt. l. wavy, whitish, intersecting a DARK BROWN SUBAPICAL BLOTCH. VIII, X.

LARVA UNKNOWN.

Sidmouth, Topsham, Exeter, Barnstaple.

C. GENMARIA. 11'''—1''. F.-w. REDDISH GREY ; c. s. black, in a white ring ; central band dark grey, faintly edged with whitish ; subt. l. whitish. VII, XI (even I h).

LARVA UNKNOWN.

Has occurred at Brighton, Bristol and Warrington. Isle of Wight.

Genus 15. PHIBALAPTERYX.

Imago: antennæ of the male simple; abdomen sometimes with a black line at the base, generally with a double row of black spots; fore-wings with the tip prolonged, sometimes rather falcate; hind-wings slightly dentate.

Larva very elongate, slender, rather attenuated in front; feeding exposed on shrubs.

Pupa subterranean.

We have five species of this genus, which may be thus separated:—

A. Lower half of central band blackish. *P. vitalbata*.

AA. Central band paler, or scarcely darker than the ground-colour.

B. F.-w. ochreous-brown. *P. tersata*.

BB. F.-w. ochreous or pale ochreous.

C. C. s. distinct.

D. A blackish apical streak. *P. lignata*.

DD. No blackish apical streak. *P. polygrammata*.

BBB. F.-w. brownish and rather pointed. *P. lapidata*.

P. TERSATA. 1" 2'''—1" 3'''. F.-w. ochreous-brown; the slightly angulated f. l. and the slightly angulated and slightly indented s. l. both dark brown, the space included very slightly darker; subt. l. wavy, pale, terminating in a small whitish blotch on the inner margin; c. s. a minute brown dot. VI, VII.

Larva pale brown, with several paler and darker longitudinal lines, and marbled with brownish black; dorsal line brown, edged with white; spiracular line grey (*Treitschke*). On *Clematis*. IX, X.

Ba. Brg. ! Brs. ! Ca. ! Ip. ! Lw. ! Ly. N. St. !

P. LAPIDATA. 1" 1'''—1" 2'''. F.-w. rather pointed, brownish, with numerous wavy transverse lines; s. l. distinctly dark brown; c. l. much indented below the costa, enclosing in its angle the grey c. s. IX.

LARVA UNKNOWN.

Rannoch.

P. LIGNATA. 1"—1" 1'''. F.-w. pale ochreous, with numerous transverse wavy darker lines,—2 near the middle form the outlines of a brownish band, in which is placed the black c. s., and 2 beyond the middle are distinctly dark brown, and unite with a dark dash from the tip of the wing. VI—VIII.

LARVA UNKNOWN.

Ba. Bi. ! Brs. Ca. Ed. !! Sc. ! St. Y. ! and Renfrewshire.

P. POLYGRAMMATA. 10''' — 11'''. F.-w. pale greyish brown ; f. l. angulated, whitish, followed by a dark brown band, which vanishes before it reaches the costa ; s. l. nearly straight, whitish, preceded by a brown band, darkest and most distinct towards the costa ; c. s. black. IV, VIII.

LARVA UNKNOWN.

Brs. Ca. !!

P. VITALBATA. 1" 1'''—1" 3'''. F.-w. pale ochreous ; the space between the f. and s. l. dark brown from the inner margin to above the middle ; a dark brown blotch connects it with the tip of the wing ; c. s. blackish. VI.



Larva reddish grey marbled with black ; a lateral flesh-coloured line is prolonged on to the anal segs. ; dorsal and sub-

dorsal lines black (*Gu.*) On *Clematis*. VI, X.

Brg. Brs. ! Ca. ! Ip. Lw. Wt.

Genus 16. SCOTOSIA.

Imago : antennæ of the male simple ; abdomen of the male with a more or less conspicuous anal tuft ; wings ample, more or less dentate ; fore-wings with numerous transverse wavy lines ; hind-wings sometimes with a tuft of scales near the anal angle.

Larva generally short, thick ; feeding, when young, enclosed in folded leaves on shrubs.

Pupa subterranean.

We have five species of this genus, which may be thus distinguished :—

- A. Central band blackish. *S. rhamnata*.
 AA. Central band grey, hardly perceptibly darker than the wings. *S. vetulata*.
 AAA. Central band reddish grey, darker at the edges.
 B. Central band broad. *S. dubitata*.
 BB. Central band narrow. *S. certata*.
 AAAA. Central band imperceptible; h.-w. with a conspicuous tuft of scales. *S. undulata*.

S. DUBITATA (Tissue). 1" 8'''—1" 9'''. F.-w. grey, with a *bright rosy tinge and glossy*; f. l. slightly angulated and much indented, followed by a brownish band; s. l. angulated and rather indented, preceded by a brownish band (the space included between these lines is nearly twice the width of that in *S. certata*); before the hind-margin is a distinct wavy whitish line, terminating in a white blotch at the anal angle; c. s. black. IV, V, and VIII, IX.

Larva pale green, with four slender white lines on the back; spiracular line bright lemon-yellow, broad (*Gu.*) On buckthorn. VII?

Ba.!! Bi. Brg. Brs.! Ca. Ct.!! Da. Ed. Ex. Ha.!! Hu.! K. L.D. Lw.! Ly. M.! N. Ne. Tn. Wt.! Y.

S. VETULATA. 1" 1'''—1" 2'''. F.-w. greyish brown, with numerous wavy transverse darker lines, and a faint indication of a darker central band, the outer edge of which is pale grey; a pale grey blotch is sometimes visible at the anal angle; c. s. dark brown, very indistinct. VI.

Larva bluish grey, with two white lines on the back; spiracular line broad, yellow (*Hub.*) On buckthorn. V.

Brg. Brs. Ca.! Ha.! K. Lw.!!

S. RHAMNATA. 1" 3'''—1" 5'''. F.-w. brown; f. l. slightly angulated and much indented; s. l. angulated and slightly indented; both are pale brown, the space included blackish brown; c. s. blackish. VII.

Larva varies: dark brown on the back; white speckled with brown on the sides;—or green, with a white spiracular

line edged below with dark reddish brown (*Hub.*) On buckthorn. V.

Brg. Brs. Ca. Ha. Lw. N. St. Wa. Y.

S. CERTATA. 1" 6'''—1" 8'''. F.-w. greyish brown, with a dull reddish tint; the f. l. slightly angulated and hardly indented, whitish, followed by a slender blackish brown band; s. l. more angulated and slightly indented, preceded by a slender blackish brown band; subt. l. wavy, whitish, terminating in a whitish blotch at the anal angle; c. s. blackish. V.

Larva purple-grey; dorsal and subdorsal lines darker; spiracular line pale greyish, with an orange spot on each seg. (*Hub.*) On barberry. VI.

Brs. Ca. ! N.

S. UNDULATA. 1" 3'''—1" 4'''. F.-w. pale grey with a faint ochreous tinge, with numerous transverse wavy dark grey lines, the central pair coalescing in the middle and then interrupted, forming a series of dots or loops. VI.

Larva blackish grey, with two slender dirty white lines on the back; subdorsal line similar, but less distinct; spiracular line broad, dirty white (*Treitschke*). On sallow. IX, X.

Brg. Brs. Ex. Ha. L.D. Ly. M. N. Pm. Pl. St. Tn. Wt. Y. and Oxford.

Genus 17. CIDARIA.

Imago: antennæ of the male simple or slightly pubescent; wings entire; fore-wings with the tip rather pointed; hind-wings rounded.

Larva elongate, slender, not attenuated in front; head often bifid; feeding on trees or shrubs.

Pupa of variegated colours.

We have fifteen species of this genus, which may be thus tabulated:—

A. F.-w. green.

B. A conspicuous white band beyond the s. l. *C. picata*.

BB. No conspicuous white band beyond the s. l.

C. F.-w. clouded with reddish. *C. psittacata*.

CC. F.-w. with no reddish tinge. *C. miata*.

AA. F.-w. yellow.

D. Central band outlined, but not darker than the ground-colour.

E. Fringes spotted. *C. dotata*.

EE. Fringes unspotted. *C. pyraliata*.

DD. Central band darker than the ground-colour.

F. Fringes spotted. *C. fulvata*.

FF. Fringes unspotted.

G. F.-w. tinged with violet. *C. testata*.

GG. F.-w. not tinged with violet. *C. populata*.

AAA. F.-w. brown.

H. C. s. of h.-w. distinct. *C. silacea*.

HH. C. s. of h.-w. imperceptible. *C. suffumata* and *C. prunata*.

AAAA. F.-w. reddish, with the base and central band black.
C. sagittata.

AAAAA. F.-w. olive-grey or of varied colours.

I. Central band dark, interrupted. *C. corylata*.

II. Central band pale, if dark not interrupted. *C. immanata* and *russata*.

C. PSITTACATA (Red-green Carpet). 1" 2'''—1" 3'''. F.-w. greyish green; f. l. moderately angulated; s. l. curved and very slightly indented; the f. l. is preceded and the s. l. is followed by a pale reddish band; the latter has a whitish blotch on the costa, and a pale and less conspicuous blotch on the inner margin. The f. l. often forms an excellent profile. IX, X.

Larva yellowish green, beneath darker; two red points from the anal seg., sometimes a row of red dorsal spots (*Treitschke*). On lime, apple, rose, &c. V.

Brg. Brs. Da. Ed. Ex. Ha. L.D.! Ly.! M. Ne. Pl.!! Sc. St. Y. Dunoon and Innellan.

C. MIATA (Autumn Green Carpet). 1" 2'''—1" 4'''. F.-w. green with a faint greyish tinge; f. l. much indented; the s. l. merely curved and serrated; a pale band precedes the f. l., and another follows the s. l., and has a whitish blotch at the inner margin. V h, IX, X.

Larva green, with two projecting points from the anal seg. (*Machin*). On alder, oak and birch. VIII.

Ba. Brg. Brs.! Ca.! Da.! Ed. Ex.! Ha.! Hu.! K.! L.D. Lw. M. Ne.! Sc. St.! Tn.!! Wt. Y.! Near Glasgow, and Dunoon.

C. PICATA. 1" 2'''—1" 3'''. F.-w. *greenish grey*, the central band darker; f. l. curved and slightly serrated; the s. l. angulated and rather serrated, and followed by a *distinct white band*; hind-margin greenish grey, with some slender wavy white lines; c. s. rather elongate, black. VI, VII.



LARVA UNKNOWN.

Ba. Brg. Ex.! Lw. Pm.! St. Tn.! and Conway.

C. CORYLATA (Broken-barred Carpet). 1 1/2'''—1" 2'''. F.-w. dark brown, with 4 wavy irregular transverse white lines, of which the first is at the end of the basal blotch; the next two include the central band, and sometimes unite below its middle; and the fourth is the subt. l; the central band is bordered on each side by a pale band; c. s. black. VI.

Larva rosy, more yellowish on the back; two small points from the anal seg. (*Freyer*). On lime and sloe. IX.

Common everywhere.

C. SAGITTATA. 1"—1" 1'''. F.-w. pale reddish brown;



basal blotch and central band blue-black, neatly edged with white. VII.

LARVA UNKNOWN.

Fens in Cambridgeshire.

C. RUSSATA (Marbled Carpet). 1'' 2'''—1'' 5'''. F.-w. rounded, grey, with numerous transverse very wavy dark lines. and with a conspicuous central pale band, in which is placed the oblique black c. s.; beyond the s. l., which is angulated and much indented, with two distinct teeth near the costa, is a more or less distinct tawny band, edged on each side by a wavy whitish line; central portion of the wing whitish, dull yellow or brownish. V—VIII.

Larva yellowish green; dorsal line darker; tip of the anal points always rosy; spiracular line sometimes red (*Gu.*) On various plants. IV, VIII.

Abundant everywhere.

C. IMMANATA. 1'' 2'''—1'' 5'''. F.-w. pointed, pale grey, with a distinct tawny band edged with white before the f. l.; s. l. angulated and much indented, but the costal portion runs obliquely outward without the two distinct teeth in *Russata*; beyond it is a tawny band edged with white; c. s. black; sometimes the central portion of the wing is entirely dark grey-brown. VII, IX.

LARVA UNDESCRIBED.

Common everywhere.

C. SUFFUMATA (Water Carpet). 1'' 3'''—1'' 4'''. F.-w. brown; a pale band before the f. l., and another beyond the s. l.; the f. l. is deeply indented; the s. l. is angulated and much serrated; both are more or less distinctly whitish; c. s. blackish. V.

Larva green, paler on the back (*Lyonnet*). On —? IV. Generally distributed and often common.

C. SILACEATA. 1''—1'' 2'''. F.-w. dark brown, paler towards the hind-margin; at the end of the basal blotch is a whitish line; the f. l. is much angulated; the s. l. is slightly curved and rather serrated below the middle; both are whitish; most of the veins preceding the f. and following the s. l. are yellowish; c. s. black, rather indistinct. V, VI.

Larva pale green ; subdorsal line white, edged above with elongate red spots ; spiracular line yellowish white (*Hu.*) On aspen. IX.

Brg. Brs. Da. Ed. Ex. Ha. L.D.! Lw. M. N. Ne.! Pm. Sc.! St.! Y. Dunoon and Renfrew.

C. PRUNATA. 1'' 4'''—1'' 7'''. F.-w. brown ; an angulated whitish line at the end of the basal blotch ; the f. l. whitish, much angulated, especially below the middle ; the s. l. nearly straight at its origin, where it is broad and white,—it then becomes more slender, is curved, slightly indented and whitish. VII, VIII.

Larva green ; spots conspicuous, white ; the 5th to 10th segs. each with a white triangular dorsal spot, edged with red ; 3rd seg. with a reddish band spotted with white (*Hub.*) On currant and gooseberry. V.

Generally distributed and often common.

C. TESTATA. 1'' 2'''—1'' 3'''. F.-w. pale reddish grey, with the basal patch and central band rather darker, and with a dull reddish blotch at the tip of the wing, edged above with white. VII—IX.

Larva whitish straw-colour ; dorsal line dark brown ; spiracular line whitish, edged above with grey (*Hub.*) On aspen. VI.

Common everywhere.

C. POPULATA. 1'' 2'''—1'' 4'''. F.-w. dull yellow, with greyish basal patch and broad dark grey central band, the latter uniting with the basal patch on the inner margin ; the f. and s. l. are far apart on the inner margin ; c. s. blackish, indistinct. VII, VIII.

Larva pale green ; spiracular line darker ; dorsal line reddish, broadest at the hinder edge of each seg. (*Hub.*) On sallow and bilberry. V.

Brg. Da. Ed.!! Hu.!! M.! Ne. Pm. St. Tn.! Y.! Near Glasgow.

C. FULVATA. 11'''—1''. F.-w. yellow ; the f. l. much serrated ; the s. l. angulated and slightly serrated, both dark

brown, *the space included brownish*, except towards the costa ; a brownish streak from the tip of the wing below a pale yellow patch. VII, VIII.



Larva whitish green on the back, dark green at the sides ; spiracular line and the incisions of the segs. whitish (*Hub.*)
On rose. V.

This very pretty little species is common everywhere : often abundant.

C. PYRALIATA (Barred Straw). 1" 3'''—1" 6''' . F.-w. dull yellow, with an indistinct basal line, pale brownish ; f. l. angulated ; s. l. angulated, serrated, brownish, and rather near one another on the inner margin ; the space included is slightly darker ; fringes dark brown except at the anal angle. VII, VIII.

Larva yellowish green ; dorsal line and between the segs. paler (*Albin.*) On whitethorn. V.

Common everywhere.

C. DOTATA. 1" 4'''—1" 5''' . F.-w. *pale* yellow ; basal blotch darker ; the angulated f. l. and the angulated and slightly serrated s. l. dark brown, the latter edged externally with whitish ; fringes very pale ochreous dotted with dark brown. VII.

Larva green ; spiracular line paler (*Sepp.*) On currant. IV, V.

Brg. Brs. ! Ca. Ex. M. N. Ne. ! Pm. St. Y. ! and near Paisley.

Genus 18. PELURGA.

Imago : antennæ of the male simple ; thorax with a central tuft of raised scales ; wings slightly dentate ; fore-wings with the tip pointed ; the costa much rounded.

Larva thick, attenuated behind, marked with dorsal lozenges ; feeding on low plants.

Pupa subterranean.

This genus contains only one species

P. COMITATA. 1" 3'''—1" 5'''. F.-w. dull yellow, with a darker yellow basal patch; the f. l. angulated near the costa, dark brown, followed by a brownish band; s. l. much angulated, dark brown, preceded by a brownish band,—sometimes they unite below the middle of the wing; c. s. black. VII.

Larva greenish grey speckled with black; spiracular line broad, yellowish grey (*Sepp.*) On *Chenopodium*. VIII, IX.

Bi. ! Brg. Ca. !! Da. ! Ed. !! Ip. K. M. Ne. !! Pm. ! Sc. ! Y. ! and Monkton.

Family XVI. EUBOLIDÆ.

Imago: antennæ of the male simple, pubescent or pectinated, but never plumose; wings entire; fore-wings with the tip always pointed, and sometimes rather falcate, generally with distinct lines and an apical streak.

Larva elongate, not attenuated, not humped; the head rounded; feeding exposed on low plants.

Pupa oblong, sometimes with a ventral protuberance.

It is quite a relief, after working through so extensive a family as the *Larentidæ*, to turn to the present family, which, so far from comprising a multitude of species, includes only eleven British representatives. They are mostly rather gay-looking insects, are easily started from their hiding-places in the day time, fly rather wild for a few seconds, and then hasten to a fresh place of rest, generally at no great distance from the spot whence the approach of the collector had disturbed them.

The earliest of this family to appear in the new year are—*Eubolia lineolata*, which, though rather local, seems plentiful where it occurs; and *Chesias obliquaria*, which should be looked for in May wherever the common broom grows freely. In the following month the same plant should be assiduously searched for *Eubolia mæniata*, which is still unique in this

country, the only indigenous specimen having been taken in the neighbourhood of Carlisle. *Eubolia mensuaria* and *plumbaria* both appear in June, and are pretty generally abundant; in the same month the collector may also expect to add 'the Treble Bar' (*Anaitis plagiata*) to his collection: this species would be highly prized for its beauty were it not so common, and when seen for the first time it is certain to attract the attention of the young collector. In June also *Lithostege nivearia* appears: this insect, though in few collections, seems to be not very uncommon in the neighbourhood of Brandon and Thetford, a locality possessing peculiar interest for the botanist on account of the number of North European plants found in no other part of our islands: may not this peculiar Flora be also productive of a variety of peculiar insects?

In July *Eubolia bipunctaria* is very plentiful on the slopes of chalky and limestone hills, and *Carsia imbutata* occurs not uncommonly on moors in the North. In the month of August *Eubolia mensuraria* and *Anaitis plagiata* still continue on the wing, and *Chesias obliquaria* may be expected to be again found in its favourite haunts. In the month of September the broom-bushes are enlivened by the presence of 'the Streak' (*Chesias spartiata*), and in gardens *Eubolia cervinata* is no great rarity, and not unfrequently, attracted by light, is found in houses.

But two of this family are at all rare, probably simply because their head-quarters have not yet been detected: these two species are *Eubolia mæniata* and *Lithostege nivearia*. The young collector may safely calculate on meeting with *Eubolia mensuraria*, *plumbaria*, *bipunctaria*, *Anaitis plagiata* and *Chesias spartiata* during his first season.

There are five genera in this family, which are represented here.

1. EUBOLIA. 2. CARSIA. 3. ANAITIS. 4. LITHOSTEGE.
5. CHESIAS.

Genus 1. EUBOLIA.

Imago: antennæ of the male pectinated (in *Lineolata* only pubescent); wings broad; fore-wings with the tip rather pointed; hind-wings rounded, not dentate; central spot generally distinct, sometimes double.

Larva elongate, cylindrical, rather swollen behind; head round; feeding on low plants.

Pupa subterranean.

We have six species of this genus, which may be thus recognised:—

A. The c. s. double.

B. Central band edged with white. *E. bipunctaria*.

BB. Central band edged with yellow. *E. maniata*.

AA. C. s. single.

C. Central band dark. *E. mensuraria*.

CC. Central band dark-edged, itself little darker than the ground-colour. *E. plumbaria*.

CCC. Central band pale, with broad dark edges. *E. lineolata*.

AAA. C. s. wanting. *E. cervinata*.

E. CERVINATA (Mallow). 1" 6'''—1" 9'''. F.-w. brown, the base, hind-margin and central band dark brown; basal line curved; f. l. much angulated; s. l. curved and rather sinuous; all these are blackish, edged with pale straw-colour. IX, X.

Larva green, whitish green beneath and between the segs.; head and legs whitish green (*Sepp.*) On mallow and hollyhock. VI, VII.

Ba. Bi. Brg. ! Brs. Ca. Ct. Da. ! Ed. ! Ex. Hu. N. Ne. ! St. !! Y. ! and Ardrossan.

E. MENIATA. 1" 4'''—1" 5'''. F.-w. pale grey; f. l.

straight; s. l. much indented, *both pale yellow*; the space included dark purplish grey, especially beyond the middle; c. s. black, double; a grey-brown streak in the tip of the wing. VI, VIII.

Larva ashy grey, more or less reddish, dotted with brown; dorsal line brownish, with black longitudinal streak (*Treitschke*). On broom. V.

Once near Baron Wood, Carlisle.

E. MENSURARIA. 1" 4'''—1" 5'''. F.-w. grey-brown with more or less of a purplish tinge; a central band, or at least the edges of it, darker; f. l. nearly straight, slightly sinuous; s. l. slightly curved and slightly sinuous; both are dark brown edged with yellowish brown, and the space included sometimes dark greyish brown; c. s. a minute black dot. VI—VIII.

LARVA HARDLY KNOWN; yellowish green (*Bork.*) On grass. VI.

Abundant everywhere.

E. PLUMBARIA (Belle). 1" 3'''—1" 4'''. F.-w. grey; basal line reddish grey; f. l. nearly straight; s. l. slightly curved, both reddish grey, and the space included rather dark grey; c. s. black. VI, VII.

Larva whitish grey, with three dark grey lines on each side (*Treitschke*). On heath and clover. III, IV.

Ba. ! Bi. !! Brg. ! Brs. !! Ca. !! Da. ! Ed. ! Ex. !! Ha. Hu. ! L.D. ! Lw. ! Ly. ! M. !! N. Ne. ! Sc. ! Wt. ! Y. !
Near Glasgow.

E. BIPUNCTARIA (Chalk Carpet). 1" 3'''—1" 4'''. F.-w. whitish grey; f. l. curved and much serrated, dark grey edged with whitish; s. l. angulated and much serrated, dark grey edged with white; the space included is rather dark grey, with a paler blotch towards the costa; c. s. represented by two black dots. VII, VIII.

Larva thick, pale brownish grey, with darker dorsal and subdorsal lines (*Treitschke*). On clover, &c. VI, VII.

Brg. !! Brs. !! Ca. !! Ha. !! Lw. !! Ne. Sc. ! Y. Castle Eden Dene, and Dover.

E. LINEOLATA. 9'''—10'''. F.-w. pale grey; f. l. nearly

straight; blackish, followed by a dark grey band; s. l. slightly curved, black, preceded by a dark grey band, and edged externally with whitish; c. s. black. V—VII.

Larva pale yellowish brown; dorsal and spiracular lines dark brown, the latter edged beneath with pale yellow (*Hub.*) On bedstraw. V, IX.

Bi. ! Brg. ! Ca. ! Lw. ! and New Brighton.

Genus 2. CARSIA.

Imago: antennæ of the male pubescent; wings entire; fore-wings with the costa towards the tip rather convex, with distinct transverse lines; hind-wings narrow, rounded.

Larva moderately stout, feeding on *Vaccinium*.

Pupa in a slight cocoon amongst moss.

This genus contains but one species.

C. IMBUTATA. 10'''—1'' 1''' . F.-w. pale grey; f. l. slightly curved, blackish, followed by a dark grey band; s. l. curved and much angulated, blackish, preceded by a dark grey band, which frequently unites with the other band below the middle of the wing; the s. l. is followed by a slender whitish line,



which a little below the costa is tinged with rosy; c. s. indistinct, greyish. VII.

Larva reddish yellow, with three violet stripes down the back; spiracular line yellowish white (*Freyer*). On *Vaccinium Oxycocco*. VI.

M. !! Ne. and Dunoon.

Genus 3. ANAITIS.

Imago: antennæ of the male simple; abdomen rather long; wings oblong; fore-wings with the tip slightly falcate, with several distinct transverse lines.

Larva rather short, stiff, slightly rugose; feeding exposed on the flowers of *Hypericum*.

Pupa elongate, with a ventral projection.

A. PLAGIATA (Treble Bar). 1" 5'''—1" 7'''. F.w. pale grey; basal line angulated, black, single on the inner margin, double towards the costa; f. l. slightly curved, blackish, followed by a dark grey band; s. l. angulated and slightly indented, black, preceded by a dark grey band, and edged externally with whitish; a little below the costa this edging has a rosy tinge; c. s. very indistinct, greyish. VI—VIII.

Larva reddish brown; dorsal line black, interrupted, slender; spiracular line distinct, bright yellow (*Gu.*) On *Hypericum*. VII.

Ba.!! Brg.! Brs.! Ca.! Ed. Ex.! Ha!! Hu. K. L.D.! Lw.! Ly.! M.! N. Ne. Pm.! Sc. St.! Tn. Gourrock, Ardrossan, Arran and Bute.

Genus 4. LITHOSTEGE.

Imago: antennæ of the male simple; abdomen long; wings oblong; fore-wings with the tip much prolonged, with no distinct markings; hind-wings short and narrow.

LARVA UNKNOWN.

L. NIVEARIA. 1" 4'''. F.w. whitish grey, with a very faint oblique dark band from the anal angle; fringes white. VI, VII.

LARVA UNKNOWN.

Thetford and Brandon.

Genus 5. CHESIAS.

Imago: antennæ of the male simple; abdomen slender, rather long; wings oblong; fore-wings rather lanceolate; hind-wings narrow, rather rounded.

Larva long, not attenuated, velvety, with distinct lines; feeding on broom.

Pupa oblong, with the ventral protuberance rather prominent.

We have two species of this genus, which may be readily separated, as in *Spartiated* there is a longitudinal white streak from the tip to the base of the wing; in *Obliquaria* a curved

ochreous streak runs from the tip of the wing to the inner margin, not crossing the s. l.

C. SPARTIATA (Streak). 1" 4'''—1" 5'''. F.-w. brown, with 3 dark brown blotches, edged with ochreous-brown, in the middle of the wing, forming as it were an interrupted band; a whitish streak runs from near the base, near the costa to the apex of the wing; it is broadest and whitest beyond the middle. IX, X.



Larva dark green; dorsal line darker, edged with pale green; subdorsal line whitish; spiracular line white (*Gu.*) On broom. VI.

Brg. Da. Ed.!! N. Ne.! St.! Wa.! Y.! and near Glasgow.

C. OBLIQUARIA. 1" 4'''. F.-w. pale grey, with a broad angulated pale tawny band before the middle, and a more slender curved one beyond the middle, terminating in the apex, the latter edged internally with dark brown. V, VIII.

Larva green, darker on the back; anal segment with two points (*Lyonnet*). On broom. VIII.

Ne.! St. and Ayrshire.

Family XVII. SIONIDÆ.

Of this family we have but a single species, which, from the sooty blackness of its wings, is aptly termed 'the Chimney Sweeper.' It appears in the middle of summer, and is pretty generally distributed. We have ourselves met with it high up some of the Scotch hills.

Genus 1. ODEZIA.

Imago: antennæ of the male simple; abdomen very slender; wings entire, unicolorous; fore-wings rather blunt at the tip. Wings erect in repose.

Larva slender, velvety, without lines; feeding on low plants.

Pupa in a slight cocoon.

O. CHÆROPHYLLATA (Chimney Sweeper). 1'' — 1'' 1'''. F.w. black; fringe at the tip white. VI, VII.

Larva velvety green, without markings (*Bork.*) On *Charo-phyllum*. V, VII.

Ba. Brg.! Ca.! Ct.!! Da.!! Ed. Hu. K.!! L.D.! Ly.! M.!! N. Ne.!! Pm. Pl.! Sc.! Y.! and near Glasgow.

This species concludes the Geometrina, and we now turn to the

PYRALIDINA.

The group to which we have now come is much less extensive with us than either of the two preceding groups. The *Pyralidæ* and *Crambidæ* combined do not muster 160 British species.

These insects are generally gregarious, and often extremely local. Individual species are often complete pests to the collector, though they may not generally be reputed common. Most of them are readily disturbed by day, and are generally active on the wing before dusk; a few species keep late nocturnal hours; some are true day insects, and fly only during bright sunshine.

The form of the typical species is rather peculiar; the fore-wings are proportionately much longer than the hind-wings; the abdomen and legs are long. Hence these insects may

generally be recognised at a glance. The peculiar lustre of the wings has procured for some of them the name of 'Pearls.'

The larvæ are generally known by a remarkably glassy appearance, and the few hairs have an unusually bristly look.

In the first portion of this group, the Pyralideous group, the markings of the NOCTUINA are reproduced; thus we have the stigmata (orbicular stigma, *orb. st.*; reniform stigma, *ren. st.*; and, though rarely, the claviform stigma, *clav. st.*; and the transverse lines, the inner line, *i. l.*; the elbowed line, *el. l.*; the subterminal line, *subt. l.*)

The Pyralidina are divided into two main groups:—

1. The Pyralideous group.
2. The Crambideous group.

The Pyralideous group is further divided into two main sections.

1. The Deltoides.
2. The Pyralites.

The Deltoides comprises two families:—

1. Hypenidæ.
2. Herminidæ.

The Pyralites are divided by Guenée into four tribes:—

- | | |
|---|-------------------|
| 1. Squamosæ, containing the family I. Odontidæ. | |
| 2. Pulverulentæ, | II. Pyralidæ. |
| | III. Cledeobidæ. |
| 3. Luridæ, | IV. Ennychidæ. |
| | V. Asopidæ. |
| | VI. Steniadæ. |
| | VII. Hydrocampidæ |
| | VIII. Botydæ. |

In this tribe we have comprised two other families not included by Guenée in this group.

- IX. Nolidæ.
- X. Choreutidæ.

Guenée's fourth tribe, *Plicatæ*, we are obliged to abandon, as the genus *Eudorea* belongs, according to our idea, to the Crambideous portion of the group, and, not wishing to keep the abnormal *Stenopteryx hybridalis* as a family by itself, it is removed to the end of the *Botydæ*.

DELTOIDES.

These insects form a sort of connecting group between the Noctuæ and the true Pyralidæ. *Hypena proboscidalis* is a familiar example of this section, and any one who has seen that insect in repose will recognise the resemblance in the form of the wings to the Greek Delta, Δ , whence the name.

In most of the species of this group the palpi are remarkably long, whence some have received the name of "Snouts."

This group comprises two families, the HYPENIDÆ and the HERMINIDÆ; in the latter family most of the species have the fore-legs ornamented with a large brush of hair, whence the name of "fan-foot."

We have but thirteen British species of the DELTOIDES, five of which are local; two, *Madopa Salicalis* and *Herminia derivalis*, are rare.

The earliest to appear in the new year is 'the Buttoned Snout' (*Hypena rostralis*), hibernated specimens of which may be met with in April, in gardens and out-houses.

In the month of June several species appear in the perfect state, the rare *Madopa Salicalis* occurring in woods, 'the Snout' (*Hypena proboscidalis*) abounding on every weedy bank where stinging-nettles 'most do congregate;' *Hypenodes albistrigalis* is by no means rare, and comes rather freely to sugar; *Rivula sericealis* is common in woody places; *Herminia derivalis* (as already mentioned) is scarce, but *H. barbalis*, *tarsipennalis* and *nemoralis* are all tolerably common. In the

month of July *Hypena proboscidalis*, *Hypenodes albistrigalis*, *Rivula sericealis*, *Herminia bartalis*, *tarsipennalis* and *nemorialis* continue on the wing; 'the Beautiful Snout' (*Hypena crassalis*) is then also to be met with: it is a local species, but not uncommon where it occurs; in forward seasons it may be looked for as early as the end of June. In July, also, the summer brood of *H. rostralis* appears; *Hypenodes costæstrigalis*, like its congener, is frequently taken by those in search of Noctuæ, owing to its partiality for sweets; *Schrankia turfosalis* abounds in a few marshy places, and *Herminia cribralis* is not uncommon in its fenny haunts. In August the scarce *Herminia derivalis* has been taken; but whether this species be double-brooded seems uncertain. In September a second brood of *Hypena rostralis* appears, stragglers of which may be occasionally met with on ivy blossom.

Family I. HYPENIDÆ.

Imago: antennæ of the male ciliated or pubescent, rarely simple; palpi rather long, ascending; fore-legs with no tuft of hairs; wings broad and slender; fore-wings often with tufts of raised scales; hind-wings generally well-developed, and without markings.

Larva elongate, cylindrical, with *fourteen* feet, the first ventral pair often ill-developed; feeding exposed.

Pupa in a slight cocoon.

This family contains four genera:—

1. MADOPA. 2. HYPENA. 3. HYPENODES. 4. SCHRANKIA.

Genus 1. MADOPA.

Imago: antennæ rather short, ciliated; palpi short, rather drooping; abdomen smooth; fore-wings acute at the tip, with distinct lines.

Larva elongate, cylindrical, attenuated at each end, with fourteen legs, the first ventral pair *undeveloped*; feeding exposed on trees.

Pupa slender, enclosed in a slight cocoon.

M. SALICALIS. 1" 2'''—1" 3'''. F.-w. grey; i. l. reddish; el. l. nearly straight, reddish; subt. l. curved, terminating *in the tip*, reddish; each of these lines edged externally with paler. VI.

Larva green, yellowish between the segs.; head green; spiracles black (*Gu.*) On sallow and willow. VI.

Tenterden; once at West Wickham; formerly near Bexley.

Genus 2. HYPENA.

Imago: antennæ long, pubescent in the male; palpi long, terminal joint rather ascending; abdomen slender, crested on the first seg.; fore-wings pointed at the tip, or even falcate, with some tufts of raised scales.

Larva elongate, slender, cylindrical, with *fourteen* feet, the first ventral pair *as distinct as the others*; feeding on low or climbing plants.

Pupa pointed, contained in a silken cocoon amongst leaves.

We have three species, which may be thus distinguished:—

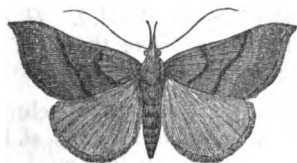
A. Inner margin of fore-wings whitish grey. *H. crassalis*.

AA. Inner margin of the fore-wings of the brownish ground-colour.

B. The i. l. sharply indented on the fold. *H. rostralis*.

BB. The i. l. not indented on the fold. *H. proboscidalis*.

H. PROBOSCIDALIS (the Snout). 1" 5'''—1" 6'''. F.-w.



brown speckled with dark brown; i. l. rather indented; el. l.

slightly curved; both dark brown; subt. l. indicated by some whitish dots. VI, VII.

Larva velvety green; dorsal line darker; subdorsal line paler (*Gu.*) On stinging-nettle. VII.

Abundant everywhere.

H. ROSTRALIS (Buttoned Snout). 1" 1'''—1" 2'''. F.-w. greyish brown; i. l. much indented; el. l. almost straight, both dark brown; beyond the former is a raised tuft of scales on the disk; subt. l. indistinctly pale grey, terminating in a dark brown apical dash. VII, IX, IV h.

Larva green; dorsal line dark green; spiracular line white; head reddish (*Hub.*) On hop. VI.

Brg.!! Ca.! K.! Lw. Pl. St.! Tn.!! and Marlow, Dorking, Chatham, Gravesend, Farnham, Arundel, Worcester and Bayswater.

H. CRASSALIS (Beautiful Snout). 1" 2'''—1" 3'''. F.-w. olive-brown; the inner margin and a band beyond the el. l. whitish; hind-margin whitish grey, with a blackish apical streak. VI e, VII b.

Larva bright green; dorsal and subdorsal lines darker; spiracles black (*Treitschke*). On heath. VII—IX.

Ex. Pl. Ranworth, Dorking, Looe, and Carrick-on-Shannon.

Genus 3. HYPENODES.

Imago: antennæ rather short, slightly ciliated; palpi long, slender, the tip ascending; abdomen slender; fore-wings entire, rather narrow, with the markings rather indistinct.

LARVA UNKNOWN.

We have two species which may be thus distinguished:—

A. A dark costal blotch before the el. l. *H. costæstrigalis*.

AA. No dark costal blotch before the el. l., which is conspicuously edged with white. *H. albistrigalis*.

H. ALBISTRIGALIS. 8'''—9'''. F.-w. ochreous-brown, paler beyond the el. l.; i. l. wavy, dark brown; el. l. nearly straight, blackish, followed by a whitish line most distinct near the inner margin; e. s. dark brown, often indistinct. VI, VII.

Ba.!! Brg.! Brs. Ex. Lw. Pl. Sc. Tn. Marlow, Ranworth, Looe and Sandown.

H. COSTÆSTRIGALIS. 9'''. F.-w. ochreous-brown, paler towards the inner margin, and a pale oblique band from the tip; i. l. much toothed; el. l. sharply angulated and slightly serrated, brown; c. s. dark brown, often placed in a dark blotch. VII.

Ba. Bi.! Brs. Ca.! L.D. Pm.! Sc. St. Y.! Chesterfield, Ranworth and New Forest.

Genus 4. SCHRANKIA.

Imago: antennæ short, simple; palpi regularly curved, ascending, third joint pointed; abdomen slender; fore-wings oblong, rounded at the hind-margin.

LARVA UNKNOWN.

S. TURFOSALIS. 6½'''. F.-w. pale grey; el. l. obliquely placed, terminating before the middle of the inner margin, whitish edged internally with black; before it is a white spot on the disk, preceded by a blackish blotch; i. l. indicated by some blackish dots; subt. l. indistinctly whitish. VII.

Delamere Forest, Keswick, Crewe, and New Forest.

Family II. HERMINIDÆ.

Imago: antennæ of the male pubescent or pectinated; palpi rather long, ascending; fore-legs frequently with a tuft of hair; fore-wings rather thick, with no tufts of raised scales; hind-wings with feeble markings.

Larva short and thick, with *sixteen legs*; feeding more or less concealed.

Pupa in a cocoon, or with only a thread round the middle.

This family contains but two genera represented here:—

1. RIVULA (the only species of which is abundantly distinguished in this group by its straw-coloured fore-wings).
2. HERMINIA.

Genus 1. RIVULA.

Imago: antennæ short, pubescent; palpi rather short, porrected; abdomen slender; wings entire; fore-wings rounded at the hind-margin; orb. st. wanting.

Larva short, thick, fusiform, the spots large, shining; with sixteen legs, all the ventral pairs equally developed; feeding on low plants.

Pupa, thick attached by the tail, and a silk band round the body.

R. SERICEALIS. 10'''—11''' . F.-w. pale yellowish ochre, clouded with brown towards the hind-margin; ren. st. conspicuous, dark grey; the wavy i. l. and the much-curved el. l. greyish, but very indistinct. VI, VII.

Larva velvety green; dorsal line darker; subdorsal line broad, white (*Gu.*) On ———? V.

Ba.! Brg.!! Brs.! Ca.!! Ex. K. Lw.! M. St.!! Tn.!! Wt.! Y. Sevenoaks, Ranworth, Chatham, Chingford, Darenth Wood, and Keswick.

Genus 2. HERMINIA.

Imago: antennæ of the male pubescent or sometimes pectinated; palpi ascending, long, terminal joint recurved; abdomen smooth; front legs of the male often with a large tuft of hair; fore-wings entire, rather rounded at the hind-margin, with distinct lines.

Larva short, attenuated at each end, the spots small; with sixteen legs; feeding concealed among dry leaves.

Pupa in a narrow cocoon amongst leaves.

Of this genus we have five species, which may be thus separated:—

A. Fore-wings with distinct lines.

B. Subt. l. wanting. *H. derivalis*.

BB. Subt. l. not wanting.

C. Subt. l. runs from the tip of the costa. *H. nemoralis*.

CC. Subt. l. runs from the costa before the tip. *H. tar-sipennalis*.

AA. Fore-wings with rather indistinct lines. *H. barbalis*.

AAA. Fore-wings with rows of spots, not lines. *H. cribralis*.

H. DERIVALIS. 1''—1'' 1'''. F.-w. ochreous-brown; i. and el. l. curved, brown, the el. l. darkest; c. s. brown; *no subt. l.* VI, VIII.

LARVA UNDESCRIBED.

Lw. Tn. and near Canterbury.

H. BARBALIS. 1'' 1'''—1'' 3'''. F.-w. greyish brown, with three darker transverse lines, the first angulated before the middle, the second angulated and rather wavy beyond the middle, the third nearly straight but rather serrated, terminating on the costa just before the tip; a short, curved, dark brown central streak. VI, VII.

Larva pale cinnamon-brown chequered with ferruginous; dorsal line blackish (*Gu.*) On oak and birch. IX—III.

Brg.! Ca. K. Lw.! St.!! Tn.!! Wt.! Y.! Oxford, Marlow, Worcester and Arundel.

H. TARSIPENNALIS. 1'' 1'''—1'' 2'''. F.-w. brown, with three darker transverse lines, the first rather curved before the middle, the second rather wavy beyond the middle, the third nearly straight towards the hind-margin, terminating *on the costa before the tip*; a short, curved, dark brown central streak. VI, VII.

Larva dull grey, with black triangles on the back, anal seg. with four white dots (*Treitschke*). On raspberry. IX, X.

Brg. Brs.!! Ca.! Ex.! Hu. K.! Lw. St.! Tn.!! Wt. Y. Conway, Chatham, Greenhithe and Darenth Wood.

H. NEMORALIS. 11'''—1''. F.-w. brown, with three transverse dark brown lines, the first, straight, before the middle, the second, wavy, beyond the middle, the third, rather curved, towards the hind-margin, terminating *in the tip of the wing*; a short dark brown central streak. VI, VII.

Larva dull grey varied with blackish, with a row of black-brown dorsal triangles edged with paler, and with oblique black-brown lateral stripes (*Treitschke*). On *Chrysosplenium alternifolium*. IV.

Common everywhere.

H. CRIBRALIS. 11'''—1''. F.-w. whitish grey, with two rows of transverse blackish dots beyond the middle, and a small central black spot. VII.

LARVA UNKNOWN.

Brg. Ca. ! Wicken Fen and Ranworth.

PYRALITES.

The group of insects comprised under the above name certainly contains a singular medley: one species now placed here was long referred to the order NEUROPTERA; one little group, the *Nolidæ*, is by many recent authors, and perhaps with reason, referred to the BOMBYCINA, being placed in the family *Lithosidæ*; another little group, the *Choreutidæ*, is placed by some among the TORTRICINA, by others among the TINEINA. From the differences of structure in these insects, as might be anticipated, we find great diversity of habit, and in one small family, the *Hydrocampidæ*, we meet with the anomalous circumstance of aquatic lepidopterous larvæ, one species, indeed, being furnished with branchiæ. The families of the PYRALITES represented in this country are ten in number.

1. ODONTIDÆ, comprising one species, *Odontia dentalis*.
2. PYRALIDÆ, comprising five species.
3. CLEDEOBIDÆ, comprising one species, *Cledeobia angustalis*.
4. ENNYCHIDÆ, comprising eight species.
5. ASOPIDÆ, comprising two species.
6. STENIADÆ, comprising three species.
7. HYDROCAMPIDÆ, comprising five species.
8. BOTYDÆ, comprising twenty-six species.
9. NOLIDÆ, comprising three species.
10. CHOREUTIDÆ, comprising four species.

In considering the seven species comprised in the first three of these families, none are met with in the perfect state before June; in that month *Pyrallis farinalis* (the 'Meal Moth') and *Aglossa pinguinalis* (the 'Tabby') are common in houses and stables, and *Pyrallis glaucinalis* comes freely to sugar and light wherever it occurs.

Cledeobia angustalis is common on chalky and sandy slopes in the South of England. All these species occur in the following month, when the 'Small Tabby' (*Aglossa cuprealis*) also occurs in houses: this species, though by no means generally common, is almost certain to be taken in some numbers wherever it does occur. In July *Odontia dentalis* may be expected to occur in localities on the coast where the viper's bugloss is abundant, and the pretty 'Gold Fringe' (*Pyrallis costalis*) is not uncommon in some localities in July and August. Stragglers of *Pyrallis farinalis* may be met with in September.

Family I. ODONTIDÆ.

Genus 1. ODONTIA.

Imago: antennæ short, pubescent; palpi slender, short, projecting; wings thick; fore-wings oblong, with a projecting tuft of scales on the inner margin.

Larva short, thick, attenuated at each end; feeding in stems. Pupa in a thick cocoon amongst leaves.

O. DENTALIS. 11'''—1'' 1'''. F.-w. whitish, clouded with greyish ochreous; the extraordinarily toothed el. l. blackish, followed by a grey band; fringe whitish, intersected with blackish. VII.

Larva yellowish white; spots black; head and plate of 2nd seg. black (*Hub.*) In the stems of viper's bugloss (*Echium vulgare*). V.

Brg. Lw. Deal and Folkstone.

Family II. PYRALIDÆ.

Imago : antennæ of the male pubescent or ciliated ; wings entire, shining, with long fringes. Inhabits houses.

Larva shining, wrinkled, vermiform ; feeding on animal matter or manufactured vegetable produce.

This family comprises but two genera :—

1. PYRALIS. 2. AGLOSSA.

Genus 1. PYRALIS.

Imago : antennæ of the male pubescent ; palpi rather short, ascending ; wings entire, rounded, shining ; fore-wings oblong, with distinct lines.

LARVA HARDLY KNOWN.

We have three species of this pretty genus, which may be thus readily recognised :—

A. Fringes all yellow. *P. costalis*.

AA. Fringes not yellow.

B. El. l. very sinuous. *P. farinalis*.

BB. El. l. nearly straight. *P. glaucinalis*.

P. COSTALIS (Gold Fringe). 9'''—10''' F.-w. rosy grey ; the i. l. and el. l. yellowish, swelling into large yellow spots upon the costa ; *fringes beautiful clear yellow*. VII, VIII.

LARVA UNKNOWN.

Brg. K. *Wt.* Marlow, Ranworth, Bayswater, Homerton and Arundel !!

P. FARINALIS (Meal Moth). 11'''—1" 1''' F.-w. reddish grey at the base and at the hind-margin, but more reddish towards the tip ; the i. l. and el. l. are whitish ; the intervening space ochreous, clouded with grey towards the inner margin. VI—IX.

Larva dull whitish ; head reddish brown ; thoracic and anal plates pale reddish brown (*Freyer*). On straw, corn, &c. IV.

Common everywhere.

P. GLAUCINALIS. 10'''—1'' 2'''. F.-w. grey, sometimes with a faint rosy tinge, with 2 distinct nearly straight slender yellow bands, one near the base, the other beyond the middle. VI, VII.

LARVA UNKNOWN.

Brg. K. St. Tn. Y.! Marlow, Chingford, Guildford, Bexley, Hackney, Bayswater.



Genus 2. AGLOSSA.

Imago: antennæ of the male ciliated; palpi porrected, rather long; abdomen rather stout; wings entire, rounded; fore-wings with indistinct markings.

Larva elongate, shiny, almost horny; feeding on fatty matters, &c.

Pupa enclosed in a slight cocoon.

We have two species, which may be readily distinguished by the colour of the hind-wings:—

A. Hind-wings greyish brown. *A. pinguinalis*.

AA. Hind-wings whitish. *A. cuprealis*.

A. PINGUINALIS (Tabby). 1'' 2'''—1'' 7'''. F.-w. greyish brown clouded with darker; an indistinct pale band before the i. l., and another after the el. l.,—both these lines are much indented; a central black spot; h.-w. *greyish brown*. VI, VII.

Larva of a uniform dark brown, with the head and plates darker (*Gu.*) On greasy horse-clothes, &c. III, IV.

Abundant everywhere.

A. CUPREALIS (Small Tabby). 11'''—1''. F.-w. glossy, greyish ochreous clouded with brown; the much-indented i. l. and el. l. of the pale ground-colour; h.-w. *whitish*. VII.

Larva shining, blackish slate-colour (*Reaumur*). On —? V.

Ca.! *Ex.* K. Chingford, Maidstone, Ranford and Cheshunt.

Family III. CLEDEOBIDÆ.

Genus 1. CLEDEOBIA.

Imago: antennæ of the male pectinated; labial palpi long, slightly arched, porrected; abdomen slender, much longer than the hind-wings; fore-wings long and narrow, the tip rounded.

C. ANGUSTALIS. 10"—1". F.-w. brown, paler at the base; a pale curved band beyond the el. l.; an indistinct central black spot; costa dotted with yellowish. VI, VII.

LARVA UNKNOWN. The pupa was found under a stone in a slight cocoon by Professor Zeller.

Ba. Brg.! Lw.! Pl. Ranworth, Deal, Box Hill and Sandown.

Family IV. ENNYCHIDÆ.

Imago of small size; antennæ of the male simple or pubescent; abdomen slender, generally with pale belts; wings entire, silky; fore-wings more or less pointed at the tip; hind-wings often with the same or similar markings as the fore-wings; flight mostly diurnal.

Larva short, thick, fusiform; the spots warty; feeding enclosed between united leaves.

Pupa in a cocoon between leaves.

The species of this family are, with one exception, true day insects, and delight to sport in the blaze of the hottest sun. Either there is a succession of broods, or the insects keep out a long time, as most of the species are to be met with continually from May to August. The six species,—*Pyrausta punicealis*, *purpuralis*, *ostrinalis*, *Herbula cespitalis*, *Ennychia cingulalis* and *anguinalis*,—all frequent dry chalky or sandy slopes, and not uncommonly may all be met with together; but most of them are difficult to see when flying, and thus

may easily escape observation. *Ennychia octomaculata* is not partial to the short grass of the dry slopes : it prefers the long grass in open places in woods, where it should be looked for in the months of June and July. *Rhodaria sanguinalis* is a very local species, though by no means a rarity where it does occur : it appears from June to August, and flies later in the evening than others of the family.

We have four genera in this family :—

1. PYRAUSTA. 2. RHODARIA. 3. HERBULA. 4. ENNYCHIA.

Genus 1. PYRAUSTA.

Imago : antennæ of the male slender, simple ; palpi rather short, straight ; abdomen with distinct pale belts ; wings brightly coloured ; fore-wings reddish, with yellow spots ; flight diurnal.

Larva short, very lively, much attenuated at each end ; feeding in a slight web between the leaves of low plants.

Pupa in a cocoon amongst leaves.

We have three species, which may be thus distinguished :—

- A. Hind-wings with a pale spot above the band.
- B. The curved yellow band beyond the middle of fore-wings formed of three distinct spots. *P. purpuralis*.
- BB. The curved yellow band beyond the middle of fore-wings not formed of distinct spots. *P. ostrinalis*.
- AA. Hind-wings with no pale spots above the central band. *P. punicealis*.

P. PUNICEALIS (Purple and Gold). 7''' — 8''' . F.-w. reddish brown, with a conspicuous yellow spot near the costa beyond the middle ; there is a small yellow spot above it, and sometimes two or three below it, *but these never appear to form a band* ; sometimes a small central yellow spot ; h.-w. black, with a single central deep yellow band. V—VIII.

Larva greenish grey ; two lemon-yellow lines on the back ; spiracular line broad, lemon-yellow ; spots black, edged with yellowish (*Gu.*) On *Origanum*. VI, VII.

Brs. ! Ca. ! Da. ! Ex. ! L.D. ! Lw. !! Wt. !! Y. Conway, Horningsea, Dorking, Sheffield and Galway.

P. PURPURALIS (Crimson and Gold). 8'''—10'''. F.-w. purple, the base yellowish ; beyond the middle a curved yellow band, consisting of three tolerably distinct spots ; it is preceded by a yellow central spot ; h.-w. blackish, with a pale yellow central band, a pale yellow spot between it and the base, and a rosy dash towards the hind-margin. V—VIII.

Larva dark grey ; dorsal and spiracular lines yellowish ; spots black, edged with white (*Hub.*) On mint ! VI, VII.

Ba. ! Brg. ! Brs. ! Ca. ! Da. ! Ex. ! L.D. ! Pl. ! K. !! Wt. Y. Hainault and Arundel.

P. OSTRINALIS. 7'''—8'''. F.-w. purple, more or less tinged with grey, *with a pale yellow band of variable width beyond the middle, but not divided into distinct spots* ; it is preceded by a small pale yellow spot on the disk ; h.-w. black, with a central pale yellow band, a pale yellow spot between it and the base, and generally a slender pale yellow streak before the hind-margin. VI—VIII.

LARVA UNKNOWN.

Bi. ! Brg. ! Brs. ! Ca. ! Da. ! Ed. !! Lw. M. ! Y. Oxford, Sevenoaks, Maidstone, Arundel, Black Park and Keswick.

Genus 2. RHODARIA.

Imago : antennæ of the male slightly pubescent ; palpi rather short, porrected ; abdomen not belted ; fore-wings rather pointed at the tip, yellow with purple bands. Flies at dusk.

LARVA UNKNOWN.

R. SANGUINALIS. $6\frac{1}{2}$ '''— $7\frac{1}{2}$ '''. F.w. dull yellow, with a central rosy band forked towards the costa, and a rosy band along the hind-margin. VI—VIII.

Bi. ! Galway.

Genus 3. HERBULA.

Imago: antennæ of the male slightly pubescent; abdomen distinctly belted; fore-wings greyish, with indistinct paler markings; hind-wings well-developed, more sharply marked; female smaller than the male, and with the markings more distinct. Flight diurnal.

Larva thick, short, with distinct spots; feeding on the radical leaves of plants.

Pupa in a thick cocoon.

H. CESPITALIS. ♂ 8'''—9'', ♀ 6'''—7''. F.-w. greyish brown, with a faint yellowish grey band beyond the el. l. only conspicuous on the costa; ren. st. rather dark grey. The female is smaller and darker, the pale band more conspicuous, and we see a pale spot between the stig. and a pale band along the hind-margin. V—VIII.

LARVA UNKNOWN.

Common everywhere.

Genus 4. ENNYCHIA.

Imago: antennæ of the male simple; palpi porrected; abdomen with white belts; wings black, with white lines or spots.

LARVA UNKNOWN.

We have three species, which are readily separated:—

A. Wings spotted; no lines. *E. octomaculata*.

AA. Wings with a distinct white band beyond the middle.

B. The band sinuous; on the under side of fore-wings a distinct white c. s. *E. anguinalis*.

BB. The band nearly straight; on the under side of fore-wings no white c. s. *E. cingulalis*.

E. CINGULALIS (Silver-barred Sable). $6\frac{1}{2}$ '''—7'''. F.-w. black; beyond the middle a slightly curved white band of almost uniform width; no central spot (on either side); sometimes a faint whitish band near the base. V—VIII.

Bi. ! Brg. Brs. ! Da. ! Ed. L.D. Lw. Pl. !! Guildford, Llandudno, Horningsea and Keswick.

E. ANGUINALIS (Wavy-barred Sable). 6'''—7½'''. F.-w. black; a wavy white band beyond the middle, not of uniform width; a central white spot, sometimes wanting, *but always distinct on the under side*, and a whitish spot on the inner margin near the base. V—VIII.

Brg. ! Brs. ! Ca. ! L.D. Lw. Sevenoaks, Guildford, Cobham, Hainault and Galway.

E. OCTOMACULATA (White Spot). 9'''—9½'''. F.-w. black, with two large white spots and one smaller one; h.-w. black, with two large white spots. VI, VII.

Brg. Hu. L.D. Lw. Pm. St. Tn. Darenth Wood, Marlow, Farnham, Lynmouth, Conway and Galway.

In reference to the ten species comprised in the following three families, three species seem decidedly rare, viz., *Agrotera nemoralis*, *Diasemia literalis* and *Nascia ciliialis*; and one, *Acentropus niveus*, is either local, or has been much overlooked, from its having so little the appearance of a lepidopterous insect. None of these insects appear in the perfect state before June, but in that month *Endotricha flammealis* is tolerably common; *Agrotera nemoralis* has only occurred at the celebrated Holme Bush, in Sussex; *Nascia ciliialis* is only to be met with in the fens, whereas *Cataclysta lemnata* may be seen flying gently over the surface of every duck-weed-covered pond in the country; *Paraponyx stratiotata* is more local than the other China Marks, but the 'Brown China Mark' (*Hydrocampa nymphæata*) and the 'Beautiful China Mark' (*H. stagnata*) seem to be pretty common everywhere. All the above-named species continue to occur in July, and in that month *Diasemia literalis* makes its appearance: this insect has generally occurred only singly and in dry places, though the idea had long been prevalent that, like the *Hydro-*

campæ, it was attached to ponds. It is in July likewise that *Acentropus niveus* is to be met with. In August the 'Long-legged Pearl' (*Stenia punctalis*) makes its appearance: this species, though local, is very abundant where it occurs.

Family V. ASOPIDÆ.

Imago of small size; antennæ of the male pubescent; palpi short; wings with common markings; fore-wings oblong, rather pointed at the tip. Flight diurnal.

LARVA HARDLY KNOWN.

This family contains two genera:—

1. AGROTERA. 2. ENDOTRICHA.

Genus 1. AGROTERA.

Imago: antennæ of the male pubescent; palpi with tufts of scales; wings thin, shining; the hind-margin of fore-wings indented below the tip.

LARVA UNKNOWN.

A. NEMORALIS. 9''' — 10'''. F.-w. yellow at the base; beyond the i. l. much clouded with brownish, darkest before the middle; el. l. rather indistinct; fringe brownish, with two conspicuous white blotches. VI, VII.



Holme Bush, near Henfield, Sussex.

Genus 2. ENDOTRICHA.

Imago: antennæ of the male pubescent; palpi short; wings entire; fore-wings at the tip rather falcate; abdomen raised in repose.

LARVA UNKNOWN.

E. FLAMMEALIS (Rosy Flounced). 9''' — 10'''. F.-w. greyish ochreous tinged with rosy, darker at the base; a slender curved whitish band before the middle, and a slightly

curved whitish band near the hind-margin ; a central black spot ; fringe grey, below the tip white. VI, VII.

Ba. ! Brg. Ca. K. Tn. ! Weybridge, Farnham, Plumstead, Bexley, New Forest, Lynton, Martinhoe and Galway.

Family VI. STENIADÆ.

Imago : antennæ of the male pubescent or slightly ciliated ; palpi rather long, porrected ; abdomen very long and slender ; tarsi of the fore-feet very long ; wings not transparent or iridescent ; fore-wings narrow, lanceolate.

LARVA UNKNOWN.

In this family we have three genera, each containing a single species :—

1. DIASEMIA. 2. NASCIA. 3. STENIA.

Genus 1. DIASEMIA.

Imago : antennæ rather short, slightly ciliated ; palpi long, porrected ; abdomen slender, longer than the wings, belted ; fore-wings narrow, lanceolate, pointed ; hind-wings rather pointed at the tip, and slightly emarginate below the tip.

D. LITERALIS. 9'''—10''' . F.-w. brown ; i. l. angulated below the middle, followed by a white band ; el. l. curved, running to the anal angle, followed by a white band ; c. s. white ; h.-w. grey-brown, with two sinuous white bands. VII.

Brs. Lyndhurst, Newnham and Sanderstead.

Genus 2. NASCIA.

Imago : antennæ of the male slightly pubescent ; palpi porrected ; fore-wings oblong, the tip pointed and slightly subfalcate ; hind-wings rounded.

N. CILIALIS. 11'''—1'' . F.-w. yellowish, tinged with brownish towards the costa ; the veins brownish purple ; el. l. faintly indicated ; edge of costa pale yellow ; h.-w. whitish

yellow; hind-margin and indistinct central band pale brownish.
VI, VII.

Wicken Fen and Yaxley.

Genus 3. STENIA.

Imago: antennæ of the male pubescent; palpi rather thick, porrected; abdomen slender, much longer than the hind-wings; legs slender and very long; fore-wings oblong, rather lanceolate; hind-wings short.

S. PUNCTALIS (Long-legged Pearl). 10'''—11'''. F.-w. ochreous-brown; the i. l. and the much-indented el. l. dark grey; the ren. st. white. VIII.

Sidmouth, Ventnor, Looe, Ranworth and Sheffield.

Family VII. HYDROCAMPIDÆ.

Imago; antennæ of the male simple; palpi rather short, ascending; abdomen rather long and slender; legs long, with long spurs; wings entire, oblong, smooth, silky, but not transparent.

Larva smooth, shining; feeding *under water* on plants, either in a case filled with air, or quite exposed to the water, and then breathing by means of branchiæ.

Pupa with a long ventral protuberance, enclosed in a cocoon.

In this family we have five genera:—

1. CATACLYSTA. 2. PARAPONYX. 3. HYDROCAMPA. 4. ACENTROPUS.

Genus 1. CATACLYSTA.

Imago: antennæ of the male simple; palpi short and slender; wings narrow and oblong; fore-wings rather pointed at the tip; hind-wings with an ocellated black band near the hind-margin; the sexes very dissimilar.

Larva elongate, with pale head; aquatic, feeding beneath

the leaves of *Lemna*, in a cylindrical silk case covered with leaves.

Pupa with a long ventral projection, enclosed in the case of the larva.

C. LEMNATA (Small China Mark). 8'''—11''' *Male*.—F.-w. white, with a blackish central dot; h.-w. white, with some irregular markings, but in the middle of the hind-margin a conspicuous black blotch, enclosing four or five silvery dots. *Female*.—F.-w. pale brownish, with a darker central spot and other indistinct markings; h.-w. more clouded with grey than in the male, but with the same conspicuous silver-dotted black blotch in the hind-margin. VI—VIII.

Larva olive-brown; dorsal line darker, especially on the anterior segments; head yellowish white (*Reaumur*). On duckweed. IV, V.

Common everywhere.

Genus 2. PARAPONYX.

Imago: antennæ of the male simple; palpi rather short, ascending; wings oblong; fore-wings with a distinct central spot; hind-wings without any ocellated black margin.

Larva with branchiæ and spiracles; aquatic.

Pupa in a cocoon amongst leaves under water.

P. STRATIOTATA. 11'''—1''. F.-w. yellowish brown; the serrated and rather indented el. l. darker; the white ren. st. edged with blackish; h.-w. white, with a double central blackish band; no black blotch at the hind-margin. VI, VIII.

Larva whitish green; dorsal line darker; head brown (*Gu.*) On *Stratiotes*, *Callitriche*, &c. III, IV.

Ba. Bi. Brs. Ca. ! Lw. Sc. St. ! Farnham, Oxford, Rannorth and Sheffield.

Genus 3. HYDROCAMPA.

Imago: antennæ of the male simple; palpi rather short, ascending; wings rather oblong; fore-wings with the hind-margin rounded, brownish, with large white spots; hind-wings with no ocellated black margin.

Larva rather thick, attenuated at each end; head black. Aquatic, living in a flat case under the leaves of water-lilies.

Pupa with a short ventral projection, enclosed in the case of the larva.

The two species of this genus may be easily separated: in *Stagnata* the yellow hind-margin of each wing is preceded by an *uninterrupted* white band; in *Nymphæata* this white band is always interrupted, and sometimes much suffused.

H. NYMPHÆATA (Brown China Mark). 11''' — 1" 2'''. F.-w. pale brownish, with three conspicuous white blotches, with dark brown margins; a whitish streak, *intersected* by some dashes of the ground-colour, runs along the hind-margin. VI, VII.

Larva dull yellowish white, tinged with brownish on the anterior segments; head and plate of 2nd seg. shining black (*Gu.*) On water-lily and *Potamogeton*. IV.

Abundant everywhere.

H. STAGNATA (Beautiful China Mark). 9''' — 10'''. F.-w. pale brownish, with six pearly white blotches occupying nearly the whole of the wing, the oblong one before the yellow hind-margin *uninterrupted*. VI, VII.

LARVA UNKNOWN.

Common everywhere.

Mr. Bond has specimens of a pale variety in which the i. l. and subt. l. are obliterated; they were taken near Cork, and perhaps may be a distinct species.



Genus 4. ACENTROPUS.

Imago: antennæ of the male slightly pubescent; palpi short, drooping; wings narrow, semitransparent.

Larva aquatic, feeding on *Potamogeton*.

Pupa in a small silken cocoon.

A. NIVEUS. 6'''—8''' . F.-w. whitish ochreous, darker towards the costa; all the veins distinctly darker; h.-w. white. VII e—VIII b.

LARVA UNDESCRIBED. On *Potamogeton pectinatus*. VII.

Burton-on-Trent, Colchester, Glanville's Wootton and Lewisham.

Family VIII. BOTYDÆ.

Imago: antennæ of the male simple; palpi porrected; abdomen rather slender, conical; wings broad, slender, shining; fore wings triangular, with shining fringes; the stigmata, i. l. and el. l. almost always distinct, the latter usually indented below the middle.

Larva shining, rather fusiform; the spots warty; feeding between united leaves.

Pupa elongate, in a slight cocoon.

Of this rather extensive family, which comprises the true 'Pearls,' three species may be considered rare, viz., *Botys lupulina*, *Spilodes palealis* and *Scopula decrepitalis*; many of the others are local, yet they cannot be considered as rarities. The earliest to appear in the new year is *Pionea forficulis* (the 'Garden Pebble'). Towards the end of May the scarce *Botys lupulina* appears; as this insect feeds on hop, it ought to be no rarity in our hop-growing counties. The local *Lancealis* is also on the wing at the end of May. In the month of June *Botys pandalis* flies among the long grass in woods, and *Verticalis* abounds among stinging-nettles, and may be seen at dusk sucking honey from the flowers of the bramble; the 'Small Magpie' (*Botys urticata*) is also abundant among nettles; *Ebulea crocealis* abounds among flea-bane, and *E. verbascalis*, though very local, is very abundant where it occurs; the scarce *Spilodes palealis* is found on chalky coasts where the wild carrot is abundant; *Scopula*

alpinalis is a mountain species, and *S. decrepitalis* appears confined to the North; *Botys fuscalis*, *Ebulea sambucalis*, *Scopula olivalis* and *prunalis* seem to be common everywhere. Among the species which appear in the perfect state in July may be mentioned *Botys flavalis* and *hyalinalis*, both of which seem peculiar to the chalk downs of the South; *B. terrealis*, which occurs among golden rod in North Wales and Devonshire; *B. asinalis*, which though local is common near Bristol; *Pionea margaritalis*, which has been taken freely near Cambridge; *P. stramentalis*, which often abounds in marshy places in woods; *Spilodes sticticalis*, which, though widely distributed, generally occurs only singly; the pretty *S. cinctalis*, by no means scarce in clover fields in the South; *S. lutealis*, common in most places where coltsfoot grows, and *S. decrepitalis*, which has only hitherto been taken in Scotland. Several of these species continue to be met with in the following month, and it is in August that *Scopula ferrugalis* first appears; this insect and *Stenopteryx hybridalis* continue on the wing in the month of September, and the peculiar flight of the latter species will teach the young entomologist the necessity of 'marking' his game, as sometimes, after a careful search at the very spot where *Hybridalis* appeared to settle, just as the collector despairs of meeting with it, it suddenly starts up from under his very nose, to settle again a few yards further on. In the month of October stragglers of *Scopula ferrugalis* may occasionally be met with on ivy bloom.

Genus 1. BOTYS.

Imago: antennæ of the male simple or pubescent; abdomen longer than the wings, and conical in both sexes; wings

entire, concolorous, shining; fore-wings with the tip often prolonged; generally with the i. l., el. l. and stigmata distinct.

Larva lively, attenuated at each end, semitransparent; the spots warty; feeding within rolled leaves.

Pupa elongate, smooth, enclosed in slight cocoons amongst leaves.

We have ten species of this genus, which may be thus recognised:—

A. F.-w. black and white. *B. urticata*.

AA. F.-w. grey.

B. A dark grey wavy band before the el. l. *B. asinalis*.

BB. No dark grey band before the el. l.

C. The el. l. serrated. *B. fuscalis*.

CC. The el. l. not serrated. *B. terrealis*.

AAA. F.-w. whitish grey.

D. F.-w. broad. *B. verticalis*.

DD. F.-w. narrow. *B. lancealis*.

AAAA. F.-w. yellowish grey or whitish straw-colour.

E. The third stigma distinct. *B. flavalis*.

EE. No third stigma.

F. The el. l. much serrated. *B. lupulina*.

FF. The el. l. slightly serrated. *B. pandalis*
and *hyalinalis*.

The last-named species may be distinguished from *Pandalis* by its larger size, more distinct stigmata, and darker hind-margin.

B. LUPULINA. 1" 1'''—1" 2'''. F.-w. pale yellowish grey; i. l. slightly angulated; el. l. much serrated, slightly angulated, grey, followed by a pale yellowish band; subt. l. grey; a pale yellow spot between the grey stig. V, VI.

Larva yellowish grey; dorsal and spiracular lines darker (*Freyer*). In the stems of hop. VII—X.

M. and Sandown, Isle of Wight.

B. PANDALIS (Bordered Pearl). 11'''—1" 1'''. F.-w. pale whitish ochreous, darker towards the costa; stig. very indistinct; the i. l. and the slightly serrated and rather indented

el. l. grey ; hind-margin pale grey, with a faint purplish tinge. VI.

LARVA UNKNOWN.

Brg. M. Pm. Y. Dursley, Marlow, Darenth Wood, Box Hill, Leatherhead, Loudwater, Guildford, Sheffield, Galway.

B. FLAVALIS. 1''—1'' 1'''. F.-w. yellowish, tinged with grey towards the costa ; the *three* stig. outlined with grey ; the i. l. and rather indented el. l. rather dark grey. VII.

LARVA UNKNOWN.

Brg. ! Lw. ! Oxford, Faversham, Sandown and Droxford.

B. HYALINALIS. 1'' 1'''—1'' 3'''. F.-w. whitish straw-colour, tinged with greyish towards the costa ; stig. dark grey ; the curved i. l. and the slightly serrated and much-indented el. l. rather paler ; the hind-margin grey with a faint purplish tinge. VII.

LARVA UNKNOWN.

Brg. Brs. !! Sevenoaks, Marlow, Box Hill, Loudwater, Chatham, Droxford and Guildford.

B. VERTICALIS (Mother-of-Pearl). 1'' 4'''—1'' 5'''. F.-w. whitish ; the straight i. l. and the serrated and much-indented el. l. dark grey ; stig. grey, the 2nd followed by a greyish cloud ; hind-margin dark greyish. VI, VII.

Larva transparent, shining, whitish green on the back ; dorsal line darker ; sides greener ; head dull green (*Gu.*) On stinging-nettle. V.

Abundant everywhere.

B. LANCEALIS (Long-winged Pearl). 1'' 1'''—1'' 3'''. F.-w. whitish grey ; the el. l. much serrated and slightly indented, dark grey, followed by a dark grey band ; stig. rather dark grey, the intervening space conspicuously paler ; hind-margin dark grey. V e, VI.

LARVA UNKNOWN.

Ba. Brg. Pm. ! Pl. ! St. Tn. Dursley, Dunsford, Canterbury, Ranworth, New Forest, Looe and Droxford.

B. FUSCALIS. 9'''—11'''. F.-w. pale grey ; el. l. dark grey, serrated and slightly indented ; i. l. and stig. indistinct, dark grey. VI.

LARVA UNDESCRIBED. On the seeds of yellow rattle. VII, VIII.

Common everywhere.

B. TERREALIS. 10'''—1''. F.-w. grey; stig. darker grey, but rather indistinct; the curved el. l. dark grey, not serrated, followed by an indistinct paler band. VII.

Larva pale green; dorsal line dark green, and with several slender rather darker lateral lines; spots blackish (*Freyer*). On the flowers of golden rod. IX.

Conway and Lynmouth.

B. ASINALIS. 1'' 1'''—1'' 2'''. F.-w. grey; a dark grey band, from the costa to the middle of the inner margin, precedes the much-indented el. l., having almost the form of a recumbent W. VII.

LARVA UNKNOWN.

Brs. ! Pl. Llandudno and Ventnor.

B. URTICATA (Small Magpie). 1'' 2'''—1'' 3'''. F.-w. white; the costa and hind-margin blackish; the stig. and the i. l. and the el. l. (which are both broad) blackish; at the base are two small yellow streaks. VI, VII.



Larva dull whitish; dorsal line dull green, edged on each side with yellowish white; head and 2nd seg. black (*Hub.*) On stinging-nettle. IX.

Abundant everywhere.

Genus 2. EBULEA.

Imago: antennæ of the male simple; palpi porrected; abdomen slender; wings entire, rather broad; tip of fore-wings rarely pointed.

Larva short, attenuated at each end, wrinkled ; feeding between united leaves.

Pupa elongate, rather swollen beneath, enclosed in a slight cocoon amongst leaves.

We have three species of this genus, which may be thus distinguished ;—

A. Wings black and white. *E. sambucalis*.

AA. Fore-wings yellowish.

B. Hind-wings yellowish, with distinct blackish central line. *E. verbascalis*.

BB. Hind-wings whitish, with very indistinct pale grey central line. *E. crocealis*.

E. CROCEALIS. 10''' — 11'''. F.-w. ochreous-yellow ; the rather curved i. l. and much-indented el. l. greyish ochreous ; stig. of the same colour, but very indistinct. VI e, VII.

Larva dull green ; dorsal line greenish black ; spots whitish ; head shining, black (*Gu.*) On *Inula dysenterica*. IV.

Ba. ! Brg. !! Brs. !! Ca. Da. K. Lw. ! M. ! Pl. !! Sc. ! St. ! Wt. ! Sidmouth, Crewe and Sheffield.

E. VERBASCALIS. 10'''—11'''. F.-w. yellow, tinged with fuscous towards the costa ; stig. indistinct, but the intervening space conspicuously pale ; the straight i. l. and much-indented el. l. dark grey ; a greyish cloud towards the hind-margin. VI.

LARVA UNKNOWN.

St. Darenth Wood, Ranworth, Chatham and Charlton.

E. SAMBUCALIS. 10'''—11'''. F.-w. dark grey-brown, with several conspicuous white blotches, one between the stig., a smaller one below the ren. st., a larger one in the angle of the el. l., and a toothed white blotch beyond the el. l. towards the costa. VI—VIII.

Larva pale green ; dorsal, subdorsal and spiracular lines generally white, sometimes pinkish ; head whitish or greenish (*H. Cooke in litt.*) On elder and *Convolvulus*. IX, X.

Generally distributed and rather common.

Genus 3. PIONEÆ.

Imago: antennæ of the male simple; palpi rather short, porrected; abdomen slender, conical, rather longer than the wings; fore-wings with the tip rather falcate; the el. l. with no deep indentation; hind-wings rounded, with no central spot.

Larva thick, fusiform; feeding on *Crucifera*, sometimes between leaves, sometimes amongst the seeds.

The three species of this genus may be thus recognised:— in *Forficalis* a dark brown apical streak meets the el. l.; in *Stramentalis* the i. l. and el. l. are distinct transverse lines; in *Margaritalis* they are represented only by dots.

P. FORFICALIS (Garden Pebble). 1"—1" 2". F.w. pale whitish ochreous, clouded with pale brownish; a brown line goes from the middle of the inner margin to the tip of the wing; it is followed by two greyish lines, and is preceded by a nearly parallel paler brown line, in the middle of which is an indistinct blackish spot (representing the ren. st.) V—VIII.

Larva yellowish green; dorsal and spiracular lines dark green; head and incisions of the segs. yellowish (*Hub.*) On cabbage, horse-radish, &c. VI, VII, IX, X.

Abundant everywhere.

P. MARGARITALIS. 1" 1"—1" 2". F.w. very pale straw-yellow; hind-margin beyond the indistinct subt. l. yellowish brown; f. and s. l. and ren. st. indicated by brownish dots. VII.

Larva pale yellow; dorsal line darker yellow; spots large and black, placed in a pale purple lateral stripe; head black. On seeds of wild mustard. VIII.

Ca. ! Deal, Ranworth and Sandown.

P. STRAMENTALIS (Chequered Straw). 1"—1" 1". F.w. pale whitish yellow; the i. l. and el. l. slightly sinuous, dark grey; the two stig. in contact, following the i. l. and outlined with dark grey; the veins beyond the middle dark grey, and a greyish brown cloud towards the hind-margin. VII, VIII.

LARVA UNKNOWN.

Brg.! Pm.! St. Tn. Sevenoaks, Red Hill, Ranworth, Watlington near Maidstone, and Shawley Wood (Worcestershire).

Genus 4. SPILODES.

Imago: antennæ of the male simple; palpi rather short, porrected; wings entire; fore-wings rather pointed at the tip, the lines generally distinct, and the el. l. not deeply indented.

Larva thick, shining; the spots warty; feeding amongst the flowers of low plants or shrubs, enclosed in silken tunics.

Pupa enclosed in a silken cocoon.

The three species of this genus may be readily distinguished by their different ground-colours.

S. STICTICALIS (Diamond Spot). 11'''—1''. F.-w. brownish grey; stig. rather darker, the intervening space whitish; el. l. serrated and indented, dark grey-brown, followed by a whitish blotch on the costa; a yellowish white streak along the hind-margin. VII, VIII.

Larva green; dorsal line dark green, edged with yellow, and with yellow lateral lines; spots whitish, edged with black. (*Treitschke*). On *Artemisia*. IX.

Ba. Bi. Brg. Hu. Pm. Dover and Halifax.

S. PALEALIS (Sulphur). 1'' 2'''—1'' 3'''. F.-w. pale brimstone; the veins, stig. and subt. l. slightly darker. VI, VII.

Larva whitish; dorsal line pale grey; spots black; head yellowish white dotted with black (*Treitschke*). On the umbels of carrot and *Peucedanum*. VIII, IX.

Folkestone.

S. CINCTALIS. 1'' 2'''—1'' 3'''. F.-w. pale yellowish; stig. slightly darker; the el. l. and subt. l. serrated, yellowish grey; h.-w. whitish, with a central and submarginal blackish band. VII, VIII.

LARVA UNDESCRIBED. On broom. VI.

Brg. Brs.! Ca.!! K. St. Oxford, Marlow, Loudwater, Sanderstead, Farnham, Sandown, Guildford, Dorking, and Castle Ashby.

Genus 5. SCOPULA.

Imago: antennæ of the male simple; palpi rather long, porrected; wings entire, silky and shining; stigmata generally distinct; hind-wings generally with a darker central spot.

Larva elongate, with warty spots; feeding between united leaves, forming a gallery open at each end.

Pupa in a cocoon amongst leaves.

We have six species of this genus, which may be thus distinguished:—

A. F.-w. grey.

B. F.-w. with distinct white spots. *S. olivalis*.

BB. F.-w. with no white spots. *S. prunalis*.

AA. F.-w. ochreous, with distinct lines and stig. *S. ferrugalis*.

AAA. F.-w. greyish ochreous, with no markings. *S. alpinalis*.

AAAA. F.-w. pale whitish grey. *S. decrepitalis*.

AAAAA. F.-w. whitish. *S. lutealis*.

S. ALPINALIS. 11'''—1'' 2'''. F.-w. greyish ochreous, without markings; in the male there is a faint indication of a whitish blotch on the disk beyond the middle. VI, VII.

LARVA UNKNOWN.

Perthshire.

S. LUTEALIS. 11'''—1''. F.-w. whitish, with a faint ochreous tinge towards the costa; the stig. margined with ochreous; el. l. grey, much indented below the middle; a small grey dash at the tip of the wing. VII, VIII.

Larva yellowish green, whitish green above, but with dorsal and subdorsal lines dark green. On coltsfoot. V.

Generally distributed and tolerably common.

S. OLIVALIS (White Brindled). 11'''—1''. F.-w. dark grey; stig. hardly darker, the intervening space *white*; a small white spot before the orb. st., two white spots on the costa before the tip, and a white blotch before the serrated el. l. VI, VII.

Larva transparent, blackish green; spots black; head greenish (*Treitschke*). On various low plants. IV, V.

Abundant everywhere.

S. PRUNALIS (Dusky Brindled). 10'''—1''. F.-w. dark grey; both stig. darker grey; the straight i. l. and the serrated el. l. both followed by a whitish spot on the inner margin. VI, VII.

Larva transparent, pale green, with two whitish stripes on the back; spots black (*Treitschke*). On various low plants. IV, V.

Abundant everywhere.

S. FERRUGALIS. 9'''—10'''. F.-w. ochreous; the indented i. l. and the serrated and much-indented el. l. grey; the stig. dark grey; a row of black dots on the hind-margin. VIII—X.

LARVA UNKNOWN.

Ba.!! Bi. Brg. Brs. Ca. Ex. Lw. M. Pl.! Farnham, Ventnor, Sandown and Malahide.

S. DECREPITALIS. 11'''—1''. F.-w. pale whitish grey; el. l. rather indistinct, greyish, serrated and slightly indented; stig. very indistinct, grey; hind-margin and tip of costa spotted with dark brown. VII.

LARVA UNKNOWN.

Perthshire and Kilmun.

Genus 6. STENOPTERYX.

Imago: antennæ of the male slightly pubescent; palpi rather short, porrected; abdomen slender, longer than the wings; fore-wings long and narrow, with very large stigmata; hind-wings ample, much broader than the fore-wings; in repose the fore-wings overlap.

LARVA UNKNOWN.

S. HYBRIDALIS. 1'' 1'''—1'' 3'''. F.-w. brown; the three stig. dark brown, that below the orb. st. very conspicuous; the i. l. and el. l. rather indistinctly indicated by dark brown dots. VI—IX.

Common everywhere.

Family IX. NOLIDÆ.

The position of this family, as already mentioned, is rather uncertain; it contains only one genus, consisting of three species; one of these, *Nola cucullatella*, is pretty generally abundant, and may be seen at rest on palings, or on the ceilings of our sitting-rooms, when, yielding to the charms of light, it has entered our open windows. *N. cristulalis*, which appears earlier in the season, is not rare, and from its whiteness is conspicuous when seated on the trunk of a tree. The third species, *Strigula*, is much rarer, and much less easily seen.

Genus 1. NOLA.

Imago: antennæ of the male ciliated; palpi rather long, rather drooping; wings entire; fore-wings with the costa rather rounded, with three tufts of raised scales; hind-wings rounded, without markings. In repose the fore-wings completely cover the hind-wings, forming a triangle.

Larva with 14 legs, short, thick, rather hairy; feeding exposed on lichens?

Pupa enclosed in a boat-shaped cocoon.

We have three species of this genus, which may be thus distinguished:—

A. I. l. distinctly angulated near the costa. *N. cristulalis*.

AA. I. l. not angulated near the costa.

B. I. l. wavy. *N. strigula*.

BB. I. l. not wavy. *N. cucullatella*.

N. CUCULLATELLA (Short Cloaked). 9'''—9½'''. F.-w. pale bluish grey, dark grey at the base; i. l. almost straight till it nearly reaches the inner margin, black; el. l. rather indistinct, grey. VI, VII.



Larva reddish brown, with yellow-brown warts and hairs; a broad interrupted white dorsal stripe streaked with bluish (*Treitschke*).

On hawthorn, sloe, &c. V.

Bi. ! Brg. ! Brs. !! Da. K. !! Lw. ! M. !! St. ! Tn. !
Wt. ! Y. !

N. CRISTULALIS (Least Black Arches). 9'''—10''' . F.-w. whitish, clouded with grey towards the hind-margin ; i. l. angulated near the costa, black ; el. l. serrated and indented, black, preceded by a grey band ; h.-w. whitish grey. V e, VI.

Larva dull whitish yellow, with three black lines on the back and one on each side ; sides more reddish ; hairs yellowish brown (*Hub.*) On oak. V.

Brg. ! Ca. K. L.D. Lw. Wt. Y. Keswick, Loudwater and Guildford.

N. STRIGULA. 10'''—11''' . F.-w. greyish white ; i. l. blackish, wavy (not angulated as in *N. cristulalis*) ; el. l. curved, wavy, blackish ; subt. l. whitish, indistinct ; h.-w. darkish grey. VI, VII.

Larva pale ochreous-yellow or flesh-colour, with a blackish blotch on the 8th seg. ; the head dark brown (*Treitschke*). On oak. V, VI.

Brg. Da. ! Sc. St. Tn. Epping, Chatham, Black Park, Horndean, Forest of Dean, Wickham and Guildford.

Family XII. CHOREUTIDÆ.

Like the preceding family, the position of this is also much in dispute. It contains two genera, of each of which we have two representatives. One species, *Simaethis Fabriciana*, appears universally abundant amongst nettles, though its peculiar mazy flight is rather puzzling to the young collector till he has learned that it is nothing worth catching. *S. pariana* is no rarity among apple trees, and is often seen in gardens in autumn sipping the honey from flowers. *Choreutes scintillulana*, though local, generally occurs in profusion ; *C. vibrana* appears to be a rarity here, as very few specimens have been detected.

Genus 1. SIMAETHIS.

Imago: antennæ simple; palpi rather short, ascending; fore-wings rather oblong; the costa more or less rounded; hind-wings with no distinct markings. In repose the fore-wings partially cover the hind-wings, and are slightly erected.

Larva with 16 legs; feeding on leaves of plants enclosed in a white web.

Pupa enclosed in a firm white cocoon.

We have but two species of this genus, which may be distinguished by the difference in the colour of the fringes of the hind-wings.

A. Fringe of hind-wings pale. *S. Fabriciana*.

AA. Fringe of hind-wings dark. *S. pariana*.

S. FABRICIANA (Nettle Tap). 6'''—7'''. F.-w. dark brown, with two blackish brown wavy bands, one before and the other beyond the middle, the latter edged externally with pale yellow. VI—IX.

Larva pale yellowish white; head, 2nd seg. and spots pale greyish brown. On stinging-nettle and pellitory (*Parietaria*). IV—VIII.

Abundant everywhere.

S. PARIANA. 5½'''—6'''. F.-w. brownish grey with a faint purplish tinge, palest beyond the middle, where the el. l. may be indistinctly traced, starting from between two pale spots on the costa. VII, IX.

Larva pale grey-green; dorsal line broad, yellowish; spots large, black. On apple and hawthorn. VI, VIII.

Ca. *Ed. Ex.*! L.D. Pl.! Cheshunt, Worcester and Lewisham, abundant.

Genus 2. CHOREUTES.

Imago; antennæ simple; palpi rather short, bristly; fore-wings rather oblong, with silvery markings; hind-wings with a white submarginal streak.

Larva with 16 legs; feeding on low plants in a white web.

Pupa enclosed in a firm white cocoon.

We have but two species of this genus, which may be readily distinguished by their different colour and markings.

C. SCINTILLULANA. 5'''—6''' . F.-w. black, with three silvery white spots on the costa, and three or four others at the disk ; a dull silvery streak terminates in the anal angle, and another precedes the hind-margin. VII.

Larva green, with blackish spots. On *Scutellaria galericulata*. VI.

Brs. ! Ca. !! M. Crewe, New Forest, and Wimbledon Common.

C. VIBRANA. 4½'''—5½''' . F.-w. brown, towards the base tawny, with several transverse silvery lines tinged with rosy or greenish. IX.

Larva green, yellowish at the sides ; spots black ; head brown (*Thun.*) On *Imula*. VIII.

Hurst, Sussex.

We now arrive at the Crambideous group of the Pyralidina. This group is divisible into four families :—

1. EUDOREIDÆ, consisting of the single genus *Eudorea*.
2. GALLERIDÆ, comprising four species.
3. PHYCIDÆ, comprising the thirty-four species of Knot-horns.
4. CRAMBIDÆ, comprising thirty-three species of the genera *Crambus* and *Chilo*.

In this section the abbreviations used are f. l. and s. l. for first and second lines, as in the *Geometrina*.

Family I. EUDOREIDÆ.

The species of this family have all great similarity of habit and appearance. The perfect insects repose by day on the trunks of trees and on rocks, forming an elongate triangle, the head being rather raised from the surface on which they

repose: they readily take alarm at the too hasty approach of the collector. The three species, *Eudorea ambigualis*, *pyralella* and *frequentella*, seem universally common; the other species are more or less local, and from the extreme similarity of the species, and their obscure appearance, they possess little attraction for incipients. They are all summer insects, occurring from May to August; only *Eudorea angustea* appears later (in September and October), and has been found early in spring after hibernation.

Genus 1. EUDOREA.

Imago: antennæ of the male slightly pubescent; labial palpi porrected, longer than the head, partially covered by the maxillary palpi; fore-wings moderately broad, not folded in repose, with two transverse lines and stigmaform markings, one of which beyond the middle forms a more or less distinct 8.

Larva dull-coloured, the spots large and horny; with 16 legs; feeding on moss and lichens in galleries of silk. In those species where the larva is not mentioned it is *unknown*.

The following is an attempt at a table of the species;—

- A. F.-w. with the 8 mark filled up with ochreous. *E. cembræ*,
E. ambigualis, *E. atomalis* and *E. pyralella*.
- AA. F.-w. with the 8 mark not filled up with ochreous.
- B. F.-w. decidedly narrow.
- C. F. l. very obliquely placed. *E. angustea* and *lineola*.
- CC. F. l. nearly straight. *E. murana* and *gracilalis*.
- BB. F.-w. not decidedly narrow.
- D. The costa rounded beyond the middle. *E. trunci-
colella*.
- DD. The costa not rounded beyond the middle. *E.
cratægella*, *frequentella*, *phæoleuca*, *resinea* and
alpina.
- BBB. F.-w. rather broad, and with no 8 mark. *E. pallida*.

E. CEMBÆ. 10'''—1" 1'''. F.-w. DULL grey; f. and s. l. darker, edged with paler; a black dash intersects the f. l. on the fold; above it is a small black spot, rarely distinct; the 8 mark filled up with ochreous-grey, rarely with distinct outline. VII, VIII.

Bi. Brs. Ed. M.! Sc. St. Y.!

E. ATOMALIS. 8½'''. F.-w. dull grey; f. and s. l. darker, edged with whitish; the 8 mark filled up with ochreous-grey; subt. band hardly divided in the middle; h.-w. PALE FUSCOUS. VII.

Perthshire.

E. AMBIGUALIS. 9'''—10'''. F.-w. pale grey or whitish; f. and s. l. dark grey, edged with whitish, the former followed by two dark grey spots; the 8 mark filled up with ochreous-grey, generally with distinct outline; subt. band GENERALLY DIVIDED in the middle; h.-w. WHITISH GREY. VI, VII.

LARVA UNDESCRIBED. In moss. IV, V.
Common everywhere.

E. PYRALELLA. 8'''—9'''. F.-w. whitish; f. l. dark grey, preceded by a distinct white band, and followed by two ochreous spots; s. l. grey, followed by a DISTINCT WHITE BAND; the 8 mark filled up with ochreous; subt. band RARELY INTERRUPTED. V, VI.



Common everywhere.

E. TRUNCICOLELLA. 9'''—10¼'''. F.-w. pale grey; f. and MUCH-SERRATED s. l. darker; f. l. followed by two black spots; the 8 mark whitish grey, with dark grey outline; subt. band interrupted in the middle. VII, VIII.

Brs.! Ex. M. Y. Wickham and Lyndhurst.

E. CRATÆGELLA. 7½'''—8'''. F.-w. WHITISH OR PALE ochreous-grey; f. and s. l. dark grey, the former followed by two dark grey spots; the 8 mark hardly darker than the ground-colour, but distinctly edged with dark grey; subt. band

GENERALLY INTERRUPTED, the upper half UNITING WITH a dark blotch on the hind-margin. VII, VIII.

LARVA UNDESCRIBED. In moss.

Brs. Ed. !! L.D. Y. and Lyndhurst.

E. FREQUENTELLA. $7\frac{1}{2}''$ — $9''$. F.-w. pale GREY; f. l. dark grey, followed by a broad ochreous band, in which are the two black spots; the 8 mark grey, with dark grey outline; subt. band generally interrupted, the upper half NOT UNITING WITH the blotch on the hind-margin. VI—VIII.

Larva dull yellowish green; head dark brown; 2nd seg. black; spots greenish black. In moss. III, IV.

Common everywhere.

E. PHÆOLEUCA. $8''$. F.-w. WHITE; the base, hind-margin and space between the f. and s. l. grey; the f. l. followed by a dark band; the 8 mark whitish, with dark grey outline. VII, VIII.

Isle of Portland.

E. RESINEA. $8''$. F.-w. whitish grey, with THREE BLACKISH COSTAL BLOTCHES, one at the base, one beyond the f. l., the third before the s. l., including and almost concealing the 8 mark. VII, VIII.

LARVA UNDESCRIBED. On lichen on ash trees.

Bi. Brs. L.D. ! Lw. Lyndhurst and Ventnor.

E. MURANA. $9''$ — $9\frac{1}{2}''$. F.-w. whitish OCHREOUS DUSTED WITH GREY; f. l. dark grey, followed by two black spots, the upper of which has a pale centre; the 8 mark whitish, with dark grey outline. VI, VII.

Larva pale brown; head and 2nd seg. black; spots dark grey brown. In moss. VI.

Ed. Ex. L.D. ! M. and various parts of the West Riding of Yorkshire.

E. LINEOLA. $8\frac{1}{2}''$ — $9\frac{1}{2}''$. F.-w. whitish, with distinct grey blotches; f. l. oblique, dark grey, followed by a black spot on the fold and an O mark above it; the 8 mark whitish or grey, with darker outline; s. l. curved and sinuous; subt. band interrupted. VIII.

Larva greenish grey; head and 2nd seg. black; spots large, shining, black. On lichen on sloe. VI e, VII b.

Brs. Ex. Lw. and Doncaster!

E. ANGUSTEA. 7'''—9'''. F.-w. pale grey; f. l. oblique, dark grey, preceded by a whitish band; s. l. sinuous, grey, approaching the f. l. on the inner margin; f. l. followed by two dark grey spots, the upper with a pale centre; the 8 mark greyish ochreous, with indistinct darker outline. VIII—X and IV h.

LARVA UNDESCRIBED. In moss. VII, VIII.

Bi. ! Brs. !! Ed. !! L.D. M. ! Sc. and various parts of the West Riding of Yorkshire.

E. ALPINA. 9'''—10'''. F. w. pale grey, with the f. and s. l. rather indistinct, the former followed by two dark spots; the 8 mark dark grey. VII.

Perthshire.

E. GRACILALIS. 9'''—10'''. F.-w. very narrow at the base, widening gradually; f. l. nearly straight; s. l. curved, and starting obliquely from the costa; the 8 mark obliquely placed and very distinct. VII.

Perthshire.

E. PALLIDA. 8'''—9'''. F.-w. pale greyish ochreous; f. and s. l. hardly darker, the former followed by two black spots; a black spot before the s. l. IS ALL THAT REMAINS OF THE 8 MARK; beyond the s. l. is a distinct white band, followed by the grey subt. band. VII, VIII.

Bi. Ed. Lw. ! Sc. ! Y. and Lyndhurst.

Family II. GALLERIDÆ.

Imago: antennæ simple; basal joint generally with a tuft of scales beneath; labial palpi short in the male, long and porrected in the female.

Larva with 16 feet, dull whitish, with dark spots and rather bristly; feeding on wax in bee-hives and the nests of wild bees, protected by silken galleries.

Pupa in a white cocoon.

This family is of small extent, comprising only four British species, placed in as many genera. The habits of the larvæ are very curious, all that are known feeding in the comb of bees and devouring the wax. The perfect insects all appear in the summer months, from June to August, and *Aphomia colonella* is not unfrequently taken flying along hedges at dusk; *Melissoblastes bipunctatus* is a local species, and, little being known of its habits, it is a rarity; *Galleria mellonella* and *Achroia grisella* are only too plentiful in those bee-hives wherever they have effected a settlement, but one may collect for many years without meeting with a specimen of either.

Genus 1. GALLERIA.

Imago: antennæ simple; basal joint with a tuft of scales beneath; palpi short, drooping; wings ample; fore-wings with the hind-margin indented, and a small indentation at the anal angle.

G. MELLONELLA. 1" 3'''—1" 6'''. F.w. reddish grey, sometimes with a faint greenish tinge, and more or less tinged with ochreous towards the inner margin, with very faint indications of two oblique dark bands. VIII.

Larva yellowish white; head brown; 2nd seg. yellowish brown; spots small, yellowish brown (*Zeller*). On wax in bee-hives. V, VI.

St. Tn.

Genus 2. APHOMIA.

Imago: antennæ simple; basal joint with a tuft of scales beneath; palpi of the male short, drooping, of the female long and more porrected; wings moderately broad; fore-wings with the hind-margin entire.

A. COLONELLA. 11'''—1" 4'''. F.w. pale reddish grey, tinged with greenish along the costa, with two serrated dark

grey lines, and between them near the costa two small black spots; in the female the second spot is larger and round; in the male the basal half of the wing is whitish. VII, VIII.



Larva yellowish grey; head reddish brown; 2nd seg. and spots brown (*Zeller*). On wax in nests of humble-bees. VIII, IX.

Brs. ! Ed. !! Ex. Lw. ! M. ! St. Tn. Wt. !

Genus 3. MELISSOBLAPTES.

Imago: antennæ simple; tuft of the basal joint obsolete; palpi of the male short, drooping, of the female long and more porrected; wings as in *Aphomia*.

M. BIPUNCTANUS. 11'''—1'' 2''' . F.-w. ochreous-grey, more or less suffused with dark, but tinged with whitish grey towards the inner margin; beyond the middle is an angulated dark grey band, sometimes indistinct; on the middle of the disk are two ocellated spots, dark grey, with whitish centres. VIII.

LARVA UNKNOWN.

Deal.

Genus 4. ACHROIA.

Imago: antennæ simple; basal joint with a slight tuft of scales; palpi very short, drooping; head smooth; fore-wings rounded at the tip and anal angle.

A. GRISELLA. 6'''—11''' . F.-w. of a uniform grey; head yellow. VI, VII.

Brs. !! and Liverpool.



Family III. PHYCIDÆ.

Imago : antennæ simple in the male, often curved near the base, sometimes with a tuft of scales in this curve ; labial palpi generally of moderate length and ascending, sometimes long and porrected ; fore-wings oblong or elongate, slightly folded in repose.

Larva with 16 legs ; feeding on the leaves or in the stems of plants, or in dried animal or vegetable substances, generally spinning silken galleries.

Pupa in a cocoon.

This is comparatively an extensive family. Some of the species are pretty and gaily marked ; they have hardly, however, met with the attention which they deserve. Their classification is rather difficult, as the important differences of structure of the antennæ are only to be noticed in the male. The perfect insects come very freely to light, and are not unfrequently observed at sugar. When disturbed in the day time their flight is rather sharp and sudden. The larvæ of the tree-feeding species are very easily found, as they generally unite several leaves together, and by discolouring them form conspicuous objects at a distance ; the seed-feeding and fruit-devouring larvæ are of course less readily observed. The commonest of this family, and those which the young collector is likely first to meet with, are *Anerastia Lotella* and *Homæosoma nimbella*, occurring on sandy coasts ; *Ephestia elutella*, not scarce amongst ivy, but most plentiful in chocolate warehouses ; *Acrobasis consociella* and *Nephopteryx roborella*, common among oaks ; *Pempelia carnella* and *dilutella*, in chalky places ; *P. fusca* and *palumbella*, on heaths and moors. All

the species appear in the perfect state between May and August.

The eleven genera of this group may be thus recognised :—

- A. The antennæ of the male with a tuft of scales in the curve near the base (the true 'Knot-horns').
- B. Labial palpi of the male slender. Genus 10. NEPHOPTERYX.
- BB. Labial palpi of the male rather thick. Genus 11. PEMPELIA.
- AA. The antennæ of the male if curved at the base, yet with no tuft of scales.
- C. Antennæ of the male not curved, simple; the basal joint untufted.
- D. Fore-wings of the male beneath with a tuft of hair. Genus 2. EPHESTIA.
- DD. Fore-wings of the male with no tuft of hair beneath.
- E. Hind-wings with a transparent patch. Genus 6. NYCTEGRETIS.
- EE. Hind-wings with no transparent patch. Genus 7. MYELOIS.
- CC. Antennæ of the male not curved, compressed above the basal joint. Genus 3. HOMÆOSOMA.
- CCC. Antennæ of the male (slightly curved) with a short projecting tooth in front near the base. Genus 5. CRYPTOBLABES.
- CCCC. Antennæ of the male (slightly curved); the basal joint with a tooth of scales. Genus 4. ACROBASIS.
- CCCCC. Antennæ of the male distinctly curved near the base. Genera — 1. ANERASTIA. 8. HYPOCHALCIA. 9. GYMNANCYLA.

Genus 1. ANERASTIA.

Imago: antennæ of the male curved near the base; labial palpi long and porrected; fore-wings powdery, with no distinct lines, sometimes with a pale costa.

A. LOTELLA. 10'''—1''. F.-w. ochreous-grey, towards the costa more ochreous, sometimes whitish. VII.

Larva pale yellow; head yellowish brown (*Zeller*). On the roots of *Aira canescens* and *Festuca ovina*. IV, V.

Bi. ! Ex. St. and Redcar.

A. FARRELLA. 11'''. F.-w. ochreous-grey, with a distinct white streak near the costa from the base to the tip, the costa itself brown. VII.

LARVA UNKNOWN.

Yarmouth and Deal.

Genus 2. EPHESTIA.

Imago: antennæ of the male not curved near the base; labial palpi rather short, ascending; fore-wings narrow, with the two strigæ; in the male the base of the costa beneath with a tuft of hair.

The four species of this genus may be readily distinguished as follows:—

A. F.-w. nearly unicolorous.

B. F. l. before the middle.

C. Costa much rounded. *E. ficella*.

CC. Costa hardly rounded. *E. elutella*.

BB. F. l. in the middle. *E. semirufa*.

AA. Basal half of fore-wings strikingly paler than the remainder. *E. interpunctella*.

E. ELUTELLA. 7'''—8'''. F.-w. pale grey with a faint ochreous tinge, especially towards the inner margin; f. l. dark grey, preceded by a pale band; s. l. grey, followed by a pale band; nearly midway between the two are two dark grey spots towards the costa. VI, VII.

Larva whitish grey, with reddish dorsal line; head and 2nd seg. pale yellowish brown. On hazel-nuts, chocolate, figs, &c. I, II.

Brs. ! Ex. M. ! Y. ! and Liverpool.

E. SEMIRUFA. 9'''. F.-w. ochreous, with a faint greyish tinge; f. l. oblique, nearly in the middle of the wing, dark

grey; s. l. dark grey, followed by a pale ochreous band; between the two lines are two dark grey spots towards the costa. VII.

LARVA UNKNOWN.

Brs. and Lyndhurst.

E. FICELLA. 8'''—10'''. F.-w. grey, with the costa much rounded; f. l. dark grey; s. l. dark grey, sinuous, followed by a pale band. IX, X.

Larva whitish; a pale reddish stripe on each side of the back; head and 2nd seg. brown. On figs. I.

London.

E. INTERPUNCTELLA. 7'''—8½'''. F.-w., basal half bone-white; beyond the blackish f. l. dark orange, more or less suffused with brown. VI, VII.

Larva dull yellowish white; head dark brown; 2nd seg. pale brown (*Treitschke*). On figs, dried insects, &c. IX, X.

London and Liverpool.

Genus 3. HOMEOSOMA.

Imago: antennæ of the male not curved, but compressed above the basal joint; labial palpi rather short, ascending; fore-wings rather narrow, with obscure strigæ.

The four species of this genus may be readily distinguished:—

A. F.-w. straw-colour. *H. sinuella*.

AA. F.-w. whitish or whitish grey.

B. Costa nearly straight. *H. binævella*.

BB. Costa much rounded. *H. nebulella* and *H. nimbella*, which two may be readily distinguished by their size.

H. NEBULELLA. 11'''—1''. F.-w. whitish, the costa rounded; two black dots before and three beyond the middle, those on the FOLD nearest the base of the wing. VII, VIII.

LARVA UNKNOWN.

Brs. and Brandon.

H. NIMBELLA. 7'''—8'''. F.-w. whitish grey towards the costa, whitish ochreous towards the inner margin, with three

black dots before and three beyond the middle, those on the disk nearest the base of the wing. V, VI and VIII.

Larva yellow or greenish white, with five broad pale violet stripes; head and 2nd seg. brownish yellow, the latter with a black spot on each side (*Treitschke*). On composite flowers. IX, X.

Bi. ! Brs. ! Ex. and Brighton.

H. BINÆVELLA. 10'''—11''' . F.-w. whitish towards the costa, pale greyish towards the inner margin; two confluent black dots on the disk before the middle, and two nearly confluent beyond the middle; BENEATH these are two paler dots on the fold. VII.



LARVA UNKNOWN.

Brs. Alkham and Brighton.

H. SINUELLA. 9'''—10''' . F.-w. pale straw-colour, sometimes with a slight rosy tinge; f. and s. l. rather dark grey, wavy; base and hind-margin clouded with grey. VII.

LARVA UNKNOWN.

Brighton.

Genus 4. ACROBASIS.

Imago: antennæ of the male with a large tuft of scales on the inner side of the basal joint; labial palpi rather short, ascending, compressed; fore-wings oblong, with distinct strigæ.

We have only three species of this genus, which are very easily separated:—

A. Basal portion of the fore-wings well contrasted with the remainder.

B. This basal portion pale reddish grey. *A. consociella*.

BB. This basal portion orange. *A. tumidella*.

AA. Basal portion of the wing not contrasted with the remainder. *A. angustella*.

A. CONSOCIELLA. 9'''—10''' . F.-w. reddish grey, paler towards the base; f. l. black; s. l. wavy, dark grey; in the

middle are two black spots on the disk.
VII, VIII.

Larva sulphur-yellow, with fine brownish stripes; head and 2nd seg. pale brownish yellow, spotted with brown (*Zeller*). On oak. V, VI.



Bi. Brs. Lw. Tn. ! Wt. ! and Lyndhurst.

A. TUMIDELLA. 9'''—10½'''. F.-w. pale reddish grey, basal portion orange; f. l. black, followed by a dark orange band; s. l. wavy, dark grey; in the middle of the disk are two black spots. VII, VIII.

Larva purple, with many slender white stripes, and a broad pale brown lateral stripe marbled with white; head and 2nd seg. brown, dotted with black (*Treitschke*). On oak. V, VI.

Brs. Lw. Wt. and Lyndhurst.

A. ANGUSTELLA. 9'''—10'''. F.-w. narrow, reddish grey; on the inner margin before the middle is a blackish blotch of raised scales; on the disk two short black streaks; s. l. serrated, brownish red. VI and VIII.

Larva pale green; spots pale brown (*Treitschke*). On spindle. VII.

Brs.

Genus 5. CRYPTOBLABES.

Imago: antennæ of the male near the base with a short projecting tooth in front; labial palpi short, ascending; fore-wings narrow, with two strigæ.

C. BISTRIGA. 8'''—9'''. F.-w. dull reddish, with an oblique whitish band before the f. l., and a slender serrated whitish band beyond the s. l. VI, VII.

LARVA UNKNOWN.

Brs. M. Chesterfield and Lyndhurst.

Genus 6. NYCTEGRETES.

Imago: antennæ simple; labial palpi long, recurved, with long terminal joint; fore-wings with two strigæ; hind-wings of the male with transparent patch at the base.

N. ACHATINELLA. $8'''-8\frac{1}{2}'''$. F.-w. brownish red ; f. l. straight, oblique, white ; s. l. straight, white, nearly parallel to hind-margin ; in the middle of the disk is a whitish spot. VII.

LARVA UNKNOWN.
Folkestone.

Genus 7. MYELOIS.

Imago : antennæ simple ; labial palpi of moderate length, ascending ; fore-wings oblong, with the strigæ generally distinct, sometimes obsolete.

The species of this genus may be separated as follows :—

A. F.-w. white, with black spots. *M. cribrum*.

AA. F.-w. grey. *M. Ceratoniæ*.

AAA. F.-w. ochreous.

B. F.-w. with two blackish bands. *M. pinguis*.

BB. F.-w. with no blackish bands. *M. Artemisiella*.

AAAA. F.-w. varied with reddish and grey.

C. The f. l. falls perpendicularly on the inner margin.
M. marmorea.

CC. The f. l. falls obliquely on the inner margin.

D. Head grey-brown. *M. suavella*.

DD. Head reddish. *M. advenella*.

M. CRIBRUM. $1'' 1'''-1'' 2'''$. F.-w. white, with four black dots before the middle and eight or ten beyond the middle, besides a row of black dots on the hind-margin. VII, VIII.



Larva greyish, striped with bluish green ; head black-brown ; 2nd seg. brownish (*Treitschke*). In thistle-stems. X—III.

Brs. Brandon, and Southend, Essex.

M. SUAVELLA. $10\frac{1}{4}'''$ — $11'''$. F.-w. brownish grey, with two whitish grey blotches on the costa, one near the base; the other, in the middle, includes the two black spots of the disk; f. l. oblique, but wavy. VII.

Larva reddish brown, with shining red-brown head; 2nd seg. black (*Treitschke*). On sloe. V, VI.

Brs. and Lyndhurst.

M. ADVENELLA. $9\frac{1}{4}'''$ — $10\frac{1}{4}'''$. F.-w. purplish grey, with a broad pale bluish grey band beyond the middle, in which are the two discoidal dots; f. l. angulated, dark grey, preceded by a dark orange blotch on the inner margin. VII, VIII.

Larva green, with reddish brown subdorsal lines; head reddish brown (*Treitschke*). On hawthorn. V, VI.

Brs. !! Lw. Wt. and Minstead.

M. MARMOREA. $8'''$ — $9'''$. F.-w. dull grey; basal portion of the wing entirely dull reddish to the f. l.; this starts obliquely from the costa, but falls perpendicularly on the inner margin; it is narrowly edged with white. VI, VII.

LARVA UNDESCRIBED. On sloe. V.

Brs. Lw. and Lyndhurst.

M. CERATONIE. $11'''$ — $1''$ $1'''$. F.-w. grey; f. l. obliquely placed, whitish grey; on the disk near the costa are two black dots; a dark grey streak runs obliquely inwards from the costa near the tip. VI.

Larva reddish white; head, 2nd seg. and spots brown (*Zeller*). On chestnuts, &c. X—I.

Once at Darenth Wood.

M. PINGUIS. $11'''$ — $1''$. F.-w. pale greyish ochreous, with a broad blackish band near the base; a slender blackish band beyond the f. l.; s. l. blackish; hind-margin clouded with grey. VII, VIII.

LARVA UNDESCRIBED. In decayed ash-trunks.

Bi. Brs. ! Lw. St.

M. ARTEMISIELLA. $7'''$ — $11'''$. F.-w. pale ochreous-grey, tinged with whitish along the costa; f. l. indented, grey, followed by an indistinct dark band; s. l. wavy, grey, preceded

by an indistinct dark band, and followed by a dark grey costal blotch; in the middle of the disk are two small dark grey spots. VII.

LARVA UNDESCRIBED. On mugwort.

Brs.

Genus 8. HYPOCHALCIA.

Imago: antennæ rather thick, in the male compressed near the base; labial palpi long, porrected; fore-wings oblong, with obsolete strigæ; female much smaller than the male.

H. AHENELLA. ♂ 1" — 1" 1"', ♀ 9"'. F.-w. rather shining, reddish grey; f. and s. l. indistinctly reddish; the female is smaller and darker; the f. and s. l. more approximating. V, VI.

LARVA UNKNOWN.

Brs. L.D. Lw. Lyndhurst, and West Riding of Yorkshire.

Genus 9. GYMNANCYLA.

Imago: antennæ in both sexes sinuous near the base; labial palpi moderately long, porrected, thick; maxillary palpi in the male with a long tuft; fore-wings rather narrow, with obsolete strigæ.

G. CANELLA. 10½"'. F.-w. whitish ochreous, more whitish towards the costa, with three grey spots before the middle, one on the fold and two on the disk; two grey spots in the middle on the disk; s. l. greyish, followed by a slender pale band; 3rd segment of body orange above. VI.

LARVA UNDESCRIBED. On *Salsola*.

Hastings and Folkestone.

Genus 10. NEPHOPTERYX.

Imago: antennæ of the male sinuous near the base, the indentation filled with long scales; labial palpi moderately long, ascending; fore-wings moderately narrow, with distinct strigæ.

Our two species of this genus may be readily distinguished by the different ground-colours.

N. ABIETELLA. 11'''—1''. F.-w. grey varied with whitish and brown; f. and s. l. wavy, black; f. l. preceded, s. l. followed, by a slender whitish band; on the middle of the disk is a black spot, followed by a white one; below it is a brownish blotch, and near the base is a brownish band. VI.

Larva pale reddish brown; on the back pale grey, sometimes dull green; head, 2nd seg. and spots reddish brown (*Zeller*). In fir-cones and decayed fir-wood. IX, X.

L.D. Sc. Y.

N. ROBORELLA. 10'''—1'' 1'''. F.-w. pale greyish brown, darker towards the base and hind-margin; f. l. dark brown, obliquely placed near the middle of the wing; s. l. dark brown, rather wavy; between these lines are several small black streaks on the veins. VIII.

Larva brown, paler at the sides, each of the five middle rings with two white spots on the back; head red-brown; 2nd seg. black-brown (*Treitschke*). On oak. V.

Brs. St. Y. Alkham and Lyndhurst.

Genus 11. PEMPELIA.

Imago: antennæ of the male sinuous near the base, the indentation filled with long scales; labial palpi moderately long, ascending, in the male rather thick; fore-wings oblong, sometimes without strigæ, sometimes with raised tufts of scales, generally with strigæ and smooth.

In this genus we have eight species, which may readily be distinguished as follows:—

A. F.-w. with no transverse lines. *P. carnella*.

AA. F.-w. with transverse lines.

B. F.-w. of varied colours.

C. A pale reddish grey blotch at the base.

D. A black band before the middle. *P. hostilis*.

DD. A black band in the middle. *P. formosa*.

CC. No pale reddish grey blotch at the base.

E. F. l. whitish, entire. *P. dilutella*.

EE. F. l. white, interrupted. *P. ornatella*.

EEE. F. l. black, preceded by a red band. *P. palumbella*.

BB. F.-w. black.

F. A tuft of raised scales before the middle. *P. Betula*.

FF. No raised scales. *P. fusca*.

P. CARNELLA. 1"—1" 1"". F.-w. rosy; a broad yellow stripe along the inner margin, and a narrow whitish or yellowish grey stripe along the costa. VII.



LARVA UNKNOWN.

Ex. Dover and Ventnor.

P. ORNATELLA. 10"—11"". F.-w. dark yellowish grey, much tinged with white towards the costa; f. l. whitish, interrupted on the fold, followed by three black spots; two black dots on the middle of the disk; s. l. slightly curved, whitish. VII, VIII.

LARVA UNKNOWN.

Mickleham and Alkham.

P. DILUTELLA. 8"—10"". F.-w. reddish grey, tinged with whitish towards the costa; f. l. whitish, not interrupted, followed by two or three dark grey spots; on the middle of the disk two black dots placed at the edge of the whitish blotch; s. l. more wavy than in *Ornatella* and less distinct, whitish grey. VII.

LARVA UNDESCRIBED. On thyme. V, VI.

Brs.! Ed. St. and Mickleham.

P. FUSCA. 11"—1". F.-w. blackish; f. l. black, preceded by a pale grey band, most distinct on the inner margin;

s l. wavy, black; on the middle of the disk are two black spots. VI, VII.

LARVA UNKNOWN.

Ex. L.D.! M.! Sc.! Y.

P. FORMOSA. $9\frac{1}{2}''$ — $10''$. F.-w. pale reddish grey, more distinctly reddish along the base of the inner margin; f. l. black, placed nearly in the middle of the wing, preceded by a slender whitish and broader blackish band; the two black spots on the disk generally unite and form a curved streak. VI, VII.



LARVA UNKNOWN.

Lewisham.

P. HOSTILIS. $10''$. F.-w. grey, reddish towards the base and in the middle; f. l. placed considerably before the middle, angulated, preceded by a whitish line and blackish band; in the middle of the disk are two or three blackish spots. VI.

Larva whitish green, with several paler stripes; spots black (*Treitschke*). On willow and poplar. IX.

Darenth Wood and Ripley.

P. BETULÆ. $10\frac{1}{2}''$ — $11''$. F.-w. blackish; f. l. black, preceded by a slender pale grey band; between this and the base is a short pale grey streak from the inner margin, on the outer edge of which is a tuft of raised scales. VI, VII.

Larva blackish, with two yellowish white dorsal lines; spiracular line yellowish white; head and spots blackish (*Zeller*). On birch. V.

Brs. M.

P. PALUMBELLA. $10''$ — $1''$. F.-w. pale purplish grey, more or less tinged with whitish along the costa and hind-margin; f. l. blackish, going obliquely from the costa, and then perpendicularly to the inner margin, preceded by a narrow dull red band; s. l. rather wavy, blackish, followed by a narrow dull red band; the two spots of the disk unite and form a curved black streak. VII, VIII.

LARVA UNKNOWN.

Bi. Brs. !! Lw.! M.! Wt.! Y.!

Family IV. CRAMBIDÆ.

The insects of this family are perfectly well known to all who have walked in a meadow in summer. Many of the species have not inaptly been termed Grass moths. The wings, which appear ample when the insect is flying, are, when it settles, folded round the body in an almost tubular form, an arrangement which enables these insects to conceal themselves amongst the grass with the least possible amount of injury. They frequent every variety of grassy places, from the dry burnt-up sand hills of the coast to the boggy places on mountain-sides, where the yielding ground threatens to engulf the precipitate collector. They all appear in the perfect state between the end of May and the beginning of September.

The larvæ of the genus *Crambus* are, from their retired habits, very little known; those only that have been observed will be mentioned here, and all unnoticed are still unknown to us; those of the genus *Chilo* have been more investigated.

The commonest species of this family, and those most generally distributed, are *Crambus pratellus*, *pascuellus*, *hortuellus*, *culmellus*, *tristellus*, *perlellus*, *Chilo forficellus* and *Phragmitellus*.

This family contains but two genera :—

1. CRAMBUS, of which we have twenty-seven representatives.
2. CHILO, of which we have only six.

Genus I. CRAMBUS.

Imago: antennæ simple; labial palpi long, porrected, forming a long beak in front of the head, partially covered by

the maxillary palpi; fore-wings oblong, the hind margin generally blunt, but sometimes with produced tip, rarely with distinct strigæ, but often with a pale central longitudinal streak.

Larva with sixteen legs; whitish or dull-coloured, the spots large and shining; feeding amongst moss in silken galleries.

Many of the species of this genus may be readily recognised by means of the following table:—

- A. F.-w. shining, white or whitish ochreous, sometimes with darker veins. *C. perlellus*, *Warringtonellus* and *lithargyrellus*.
- AA. F.-w. brown, with no transverse lines, with one longitudinal white streak.
 - B. The streak runs through to the fringes. *C. latistrius*.
 - BB. The streak stops before the hind-margin.
 - C. The streak is broadest beyond the middle.
 - D. The streak broad and shining. *C. margaritellus*.
 - DD. The streak narrow and dull. *C. furcatellus*.
 - CC. The streak is narrowest beyond the middle. *C. selasellus*.
 - AAA. F.-w. brown, with one transverse line, and a broad interrupted longitudinal white streak. *C. pinetellus*.
 - AAAA. F.-w. grey-ochreous or brown, with two transverse lines, with no brilliant longitudinal streak.
 - E. Both lines sharply angulated near the costa. *C. geniculeus*.
 - EE. The lines not sharply angulated near the costa. *C. tristellus*, *contaminellus*, *hortuellus*, *inquinatellus*, *Pedriolellus*, *chrysonuchellus*, *rorellus*, *Cassentiniellus* and *cerussellus*.
 - AAAAA. F.-w. ochreous-brown, with no transverse lines. *C. culmellus*.
 - AAAAAA. F.-w. brown or ochreous-brown, with one transverse line and a pearly white longitudinal streak. *C. pratellus*, *dumetellus*, *ericellus*, *sylvellus*, *hamellus*, *pascuellus* and *uliginosellus*.
 - AAAAAAA. F.-w. white streaked with brown, with two transverse brown lines. *C. falsellus*.

C. CERUSSELLUS. $6'''-6\frac{1}{2}'''$. *Male*.—F.-w. brown, with two darker angular lines beyond the middle, the second edged externally with paler. *Female* whitish, but with similar markings. VI.

Lw. M. and Mickleham.

C. ROSELLUS. $9\frac{1}{2}'''-10'''$. F.-w. yellowish white streaked with brown, and with two slender brown transverse lines beyond the middle; the dark streaks between the second and the hind-margin are *nine* in number; palpi *as long as* the head and thorax together. VI.

Locality unknown.

C. CASSENTINIELLUS. $10'''-11'''$. F.-w. yellowish white streaked with brown, and with two broadish brown transverse lines beyond the middle; the dark streaks between the second and the hind-margin are *eight* in number; palpi *longer than* the head and thorax together. VI.

Brighton.

C. CHRYSNUCHELLUS. $10'''-11'''$. F.-w. grey, the veins yellowish white; a brown central line rather oblique, and an angulated brown line edged externally with whitish towards the hind-margin; palpi *not so long as* the head and thorax together. V, VI.

Brs. ! Lw. ! Alkham !

C. FALSELLUS. $9'''-10'''$. F.-w. whitish streaked with grey; a white streak from the middle of the base to the middle of the wing, and a small white blotch beyond it; before the hind-margin is an angulated grey line, indented below the middle. VII, VIII.



Larva pale grey; spots large, pale grey, with blacker centres; head and 2nd seg. brownish (*Treitschke*). In moss. II—V.

Ed. Lw. M. St.

C. PRATELLUS. $9'''-10'''$. *Male*.—F.-w. brown, with a darker angulated transverse line towards the hind-margin; a slender white basal streak is acutely pointed beyond the

middle, and is followed by a small whitish blotch. *Female* much paler, sometimes whitish. V—VII.

Abundant everywhere.

C. DUMETELLUS. $9\frac{1}{2}'''$ — $10\frac{1}{2}'''$. F.-w. shining, brownish ochreous, with some silvery-looking streaks beyond the middle; before the hind-margin is an angulated brownish line; a silvery white streak from the base reaches beyond the middle, and has a wedge-shaped termination. VI, VII.

Bi. Brs. !! Pm. ! Lyndhurst and Musselborough !!

C. ERICELLUS. $9'''$ — $9\frac{1}{2}'''$. F.-w. ochreous-brown, paler towards the inner margin; a whitish streak from the base terminates *acutely* beyond the middle, and is followed by a small white blotch, which extends to the angulated brown line before the hind-margin; at the tip of the wing is a small white spot. VII.

Perthshire.

C. SYLVELLUS. $11'''$. F.-w. glossy, ochreous-brown, paler towards the inner margin; a dark brown angulated line immediately precedes the hind-margin; it is intersected below its angle by the silvery white streak from the base, which is contracted beyond the middle, and intersected by a *slightly oblique* line. VI.

Lyndhurst.

C. HAMELLUS. $11'''$. F.-w. brownish ochreous, rather glossy; basal streak silvery white, broad at the base, with a slight fork below in the middle, the end wedge-shaped; beyond it is an angulated brownish line. VII.

M. and Weybridge.

C. PASQUELLUS. $10\frac{1}{2}'''$ — $11\frac{1}{2}'''$. F.-w. pale brownish ochreous, tinged with whitish along the inner margin; basal streak broad, white, acutely pointed; its costal edge starting from the costa *near the base*; beyond it is a small whitish



blotch, reaching nearly to the angulated brown line which precedes the hind-margin; tip whitish, *rather produced*; h.-w. pale grey. VI, VII.

Abundant everywhere.

C. ULGINOSELLUS. 8'''—10'''. F.-w. glossy, pale brownish ochreous, with a white streak along the inner margin; basal streak broad, shining, white, acutely pointed, its costal edge starting from *the middle* of the costa; beyond it is a small white blotch, reaching to the angulated brown line which precedes the hind-margin; tip whitish, *not produced*; h.-w. *whitish, white* in the female. VI e.

Pm. !! Tn. !! and in one corner of Reigate Heath.

C. HORTUELLUS. 10'''—10½'''. F.-w. ochreous-brown, with the veins paler towards the inner margin, often whitish ochreous; a brown angulated line edged with silvery precedes the hind-margin, and sometimes another angulated brown line is perceptible in the middle of the wing. VI, VII.

Larva whitish grey; spots darker grey, with blackish centres; head pale brown; 2nd seg. pale grey (*Treitschke*). In moss. IV, V.

Abundant everywhere.

C. CULMELLUS. 8'''—9'''. F.-w. ochreous-brown towards the costa, the inner margin generally much paler, sometimes with a greyish tinge; *no transverse lines*; fringe glossy. VI, VII.

Abundant everywhere.

C. PEDRIOLELLUS. 1'' 1'''—1'' 2'''. F.-w. dull greyish ochreous, the veins pale grey; two indistinct, angulated, transverse dark lines; hind-margin dotted with black; fringe grey, with three small whitish blotches. VII.

Once at Yarmouth.

C. INQUINATELLUS. 10½'''—1''. F.-w. brownish ochreous, many of the veins whitish ochreous, with two rather *indistinct*, angulated, transverse brown lines, one in the middle, the other beyond the middle; fringe *not glossy*. VIII.

Brs. !! Lw. ! Sc. Wt. ! Y. ! Lyndhurst and Bexley.

C. GENICULEUS. 9'''—10'''. F.-w. grey, with a faint purplish tinge, with two dark brown, transverse, angulated lines, the *second rather sharply marked*, and edged externally with whitish; *fringe glossy*. VII, VIII.

Bi.! Brs.!! Ex.! Lw.! Tn.!! Wt.! Lyndhurst and Bexley.

C. CONTAMINELLUS. 9½'''—10½'''. F.-w. ochreous-brown, darker towards the costa and hind-margin, with two rather indistinct, brown, angulated, transverse lines; *fringe not glossy*. VII, VIII.

Brs. Ed. Preston and Blackheath.

C. SELASELLUS. 10½'''—1''. F. w. pale or dark greyish ochreous, with a distinct central white streak reaching beyond the middle, and then forked; *no trace of a dark transverse line*. VII, VIII.

Brs.! M.! Sc.! and Lyndhurst.

C. TRISTELLUS. 11'''—1'' 2'''. F.-w. dull yellow or grey-brown (very variable in shade and intensity), with a slender central pale streak, sometimes white, reaching beyond the middle, and then forked; *towards the hind-margin is an indistinct, brown, angulated line*. VII—IX.

Abundant everywhere.

C. FURCATELLUS. 9'''—10'''. F.-w. *olive-brown*, with a slender central white streak, broadest beyond the middle, and terminating before the hind-margin,—its lower edge beyond the middle is rather jagged. VII.

L.D.! Snowden and Skiddaw.

C. MARGARITELLUS. 9'''—10'''. F.-w. shining, ochreous-brown; a pearly white central streak, broadest beyond the middle, reaches *almost to the hind-margin*; towards the anal angle it emits a small tooth. VI.

Ex.! L.D.! M.! Y.

C. PINETELLUS. 11½'''—1''. F.-w. rich yellow-brown,



mottled with darker beyond the middle; a pearly white wedge-shaped blotch reaches to the middle; beyond it is an oblong pearly white blotch edged with dark brown. VII, VIII.

Brs. Ex. M. Tn.

C. LATISTRIUS. 10'''—1''. F.-w. ochreous-brown more or less tinged with grey, with a central white streak of nearly uniform width, which extends right to the hind-margin, and is continued in the fringe. VII.

Bi. Ex. St. and Weybridge.

C. PERLELLUS. 1''—1' 1'''. F.-w. satiny white, sometimes more or less of a yellowish tinge, sometimes with the veins greyish; palpi and antennæ whitish grey. VII, VIII.

Bi. ! Brs. !! Lw. ! M. !! Tn. ! Wt. !

C. WARRINGTONELLUS. 9½'''—10½'''. F.-w. satiny white, with the veins and inner margin grey; palpi and antennæ dark grey. VII, VIII.

L.D. M. !! and Lyndhurst.

C. LITHARGYRELLUS. 1'' 1'''. F.-w. glossy, yellowish grey, with the veins scarcely paler. VIII.

Once near Guildford.

Genus 2. *CHILO*.

Imago: antennæ of the male generally ciliated; labial palpi long, porrected (in *Paludellus* short and ascending); fore-wings oblong or lanceolate; hind-wings rather ample.

Larva with 16 legs, elongate; feeding in the stems of aquatic plants.

We have five species of this genus, which may be thus recognised:—

A. A narrow pale streak along the costa.

B. Tip of f.-w. pointed. *C. mucronellus*.

BB. Tip of f.-w. rounded. *C. cicatricellus*.

AA. No pale streak along the costa.

C. A brownish oblique streak from the tip of f.w.

C. forficellus.

CC. No dark streak from the tip.

D. H.-w. pale ochreous. *C. phragmitellus*.

DD. H.-w. whitish. *C. gigantellus*.

DDD. H.-w. pearly white. *C. paludellus*.

C. PALUDELLUS. $11'''-1''$. F.-w. whitish grey, with two black dots before the middle, and a transverse row of black dots beyond the middle; h.-w. white. VII.

Larva shining, white; head brownish; spots grey (*Treitschke*). In leaves of *Typha latifolia*. V, VI.

Ranworth.

C. MUCRONELLUS. $11'''-1'' 1'''$. F.-w. greyish brown, darker along the centre of the wing, pale ochreous along the costa. VII.

Larva on reed. VI.

Wicken Fen, near Cambridge; and Ranworth.

C. FORFICELLUS. $11'''-1'' 1'''$. F.-w. pale greyish ochreous, more or less tinged with brownish towards the costa; one brown dot before the middle and two beyond the middle, and a brown streak obliquely from the tip of the wing. VI, VII.

Larva greyish green, paler behind; dorsal line dark green; head black, 2nd seg. spotted with black (*Treitschke*).

On *Poa aquatica*. V, VI.

Bi. Brs. Ex. Lw.! M. Wt.! Y!

C. GIGANTELLUS. ♂ $11'''-1'' 1'''$, ♀ $1'' 7'''-1'' 9'''$. F.-w. grey, with a slight ochreous tinge, one or two black dots before the middle, and a transverse row of black dots beyond the middle; h.-w. white, with hind-margin and a band near it grey. The female has the f.-w. unspotted, and the h.-w. entirely white. VII.

Larva pale yellow tinged with greyish; head and 2nd seg. shining, yellowish brown (*Treitschke*). On reed. V, VI.

Whittlesea.



C. PHRAGMITELLUS. 11'''—1'' 4''' . F.-w. pale brownish ochreous, more or less suffused with brown ; a black spot on the disk beyond the middle, and a row of black dots on the hind-margin. VI, VII.

Larva bone-coloured, with five brown stripes ; head and 2nd seg. yellowish brown (*Treitschke*). On reed. X—VI.

Bi. Lw. Sc. !

C. CICATRICELLUS. 1'' 2'''—1'' 3''' . F.-w. purplish grey, more ochreous towards the inner margin, with three dark spots on the disk, sometimes separated by some whitish scales ; a white streak generally runs along the costa. VII.

Larva dirty white tinged with reddish ; dorsal line dark red ; head yellow ; 2nd seg. yellowish, spotted with black behind ; spots black (*Treitschke*). On *Scirpus lacustris*. V, VI.
Dover.

Family CHLOEPHORIDÆ.

This family has been rendered necessary for the reception of three species hitherto placed amongst the *TORTRICINA*, and of which we do not even yet appear to have discovered the proper position. They are placed by Herrich-Schæffer, along with several other singular species, towards the end of the *NOCTUINA*. From the *TORTRICINA* they are separated by their size, larvæ and habits. These species form two genera, —1. *CHLOEPHORA* ; 2. *EARIAS*,—the latter of which, from the smaller size of the insects, and more concealed mode of life of the larva, seems to approximate towards the *TORTRICINA*.

Genus 1. CHLOEPHORA.

Imago of moderate size ; antennæ simple ; body rather stout ; fore-wings green, with oblique paler lines.

Larva with sixteen legs ; feeding exposed on the leaves of trees.

Pupa in a firm boat-shaped cocoon.

We have two species of this genus, readily distinguished by the colour and position of the transverse lines on the fore-wings.

C. PRASINANA. 1" 3'''—1" 5'''. F.-w. greenish, with three oblique silvery white lines; fringe reddish. V.



Larva pale green dotted with yellow; subdorsal lines yellow; front edge of 2nd seg. yellowish red (*Treitschke*). On oak, birch, hazel, alder, beech, &c. VII, VIII.

Common round London.

C. QUERCANA. 1" 9'''—1" 10'''. F.-w. green, with two oblique sulphur-coloured lines; fringe whitish. VII.

Larva yellowish green; subdorsal lines yellowish (*Treitschke*). On oak. V.

Not common round London.

Genus 2. *EARIAS*.

Imago of small size; antennæ simple; fore-wings green, with whitish costa, but no transverse lines.

Larva with sixteen legs; feeding between the terminal leaves of twigs of willow, forming a peculiar bundle of them.

Pupa in a firm boat-shaped cocoon.

E. CLORANA. 9'''—11'''. F.-w. green; a broad whitish streak from the base to beyond the middle. V.

Larva greenish grey, paler on the back; subdorsal line blackish (*Treitschke*). On willow, in terminal shoots. VIII.

Common in osier-beds.



TORTRICINA.

This group, at which we have now arrived, has hitherto, unfortunately, been much neglected: the similarity and dullness of marking of the perfect insects render the group an unattractive one to the student, and the larvæ have neither the variety of form nor of habit by which those of the *TINEINA* are so especially distinguished.

The shortness of the palpi and the breadth of the blunt fore-wings are the most striking general characters of the perfect insects. The larvæ have always 16 legs, and feed either in rolled-up leaves or in the roots and stems of plants.

The principal markings on the fore-wings of this group are four in number, namely, a basal patch (b. p.), a central fascia (c. f.), a spot on the costa near the tip (c. s.), and an ocellated patch near the anal angle (oc.)

The 298 species of *TORTRICINA* which occur in these islands may be divided into nine families, thus:—

1. Tortricidæ, containing 37 species.
2. Plicatæ, ,, 59 ,,
3. Anchyloperidæ, ,, 38 ,,
4. Peroneidæ, ,, 21 ,,
5. Stigmonotidæ, ,, 46 ,,
6. Carpocapsidæ, ,, 19 ,,
7. Cnephassidæ, ,, 13 ,,
8. Sericoridæ, ,, 21 ,,
9. Lozoperidæ, ,, 44 ,,

Family I. TORTRICIDÆ.

Imago: fore-wings broad, rarely twice as long as broad; the costa regularly arched, never folded; the b. p., c. f. and

c. s. generally distinct ; oc. absent (only faintly indicated in a few of the genus *Antithesia*).

Larva generally active ; feeding in united or rolled-up leaves ; mostly in early summer.

Few of the species of this family are to be met with in the perfect state before the month of June, but in that month and in July they abound, and a few make their appearance in August. They vary much in their markings, from the unicolorous green of *Tortrix viridana*, and the dull oblique-banded appearance of *Tortrix heparana*, *Ribeana*, *Corylana*, &c., to the more striking contrast of colour of black and white which we find in the genus *Antithesia*.

Only one of the species can be considered, in this country, as a highly destructive insect ; but in the month of June oak trees are sometimes entirely stripped of their leaves by the ravages of the larva of the Green Tortrix (*Tortrix viridana*). *Ctenectra Pilleriana*, so destructive to the vines in France, is here a great rarity. Our fruit trees may suffer occasionally from the attacks of *Tortrix heparana* and *Ribeana*, but probably not to any great extent.

This family contains twelve genera, which may be thus roughly tabulated :—

- A. Fore-wings with the tip white or ochreous. Genus 6. *ANTITHESIA*.
- AA. Fore-wings with the tip not white or ochreous.
 - B. Fore-wings with the inner margin broadly white. Genus 7. *PENTHINA*.
 - BB. Fore-wings with the inner margin not white.
 - C. The central fascia nearly straight.
 - D. The fascia distinct ; palpi long. Genus 1. *SARROTHRIPA*.
 - DD. The fascia very indistinct ; palpi short. Genus 4. *EULIA*.

- CC. The central fascia obliquely placed.
 E. The fascia interrupted, forming only a distinct spot on the costa. Genus 5. BRACHYTÆNIA.
 EE. The fascia interrupted, forming a small costal and large dorsal spot. Genus 8. SIDERIA.
 EEE. The fascia entire, but not confluent with the apical costal spot.
 F. Palpi three times as long as the head. Genus 10. CENECTRA.
 FF. Palpi not twice the length of the head. Genus 9. DICHELIA; and part of genus 12. TORTRIX.
 EEEE. The fascia entire, uniting with a prolongation of the apical costal spot.
 G. Antennæ pectinated. Genus 2. AMPHISA.
 GG. Antennæ simple. Genus 3. HYPERMERCIA.
 CCC. Fore-wings without markings. Genus 11. CLEPSIS; and part of genus 12. TORTRIX.

Genus 1. SARROTHRIPA.

Imago: antennæ filiform; palpi much longer than the head; fore-wings elongate, the costa abruptly arched, the apex obtuse; no tufts of raised scales on the surface of the wings.

S. REVAYANA. 11'''—1''. F.-w. glossy, greyish, tinged with green or ochreous; the c. f. nearly straight, broad and most distinct on the costa; towards the hind-margin is a much-indented transverse line. This insect is extremely variable. VII—X.

Larva green; dorsal vessel darker; head reddish (*Hub.*)
 On sallow.

Near London, New Forest, Mickleham, Norfolk, &c.

Genus 2. AMPHISA.

Imago: antennæ pectinated; palpi much longer than the head; fore-wings elongate (almost lanceolate in the female); the costa slightly arched towards the base.

In this genus we have two species, readily distinguished by the different ground-colours, the fore-wings of *Gerningiana* being yellowish brown, those of *Prodromana* grey.

A. GERNINGIANA. $6\frac{1}{2}''' - 8'''$. F.-w. yellowish brown, darker posteriorly; b. p. indistinct; c. f. distinct, dark brown, oblique; c. s. dark brown, the space below it reticulated with the same colour. VI—VIII.

Larva on Vaccinium?

On heaths and moors. In the North of England and Scotland.

A. PRODROMANA. $8'''$. F.-w. grey or whitish grey; b. p. reddish brown, rather indistinct; c. f. reddish brown, oblique, distinct, uniting posteriorly with a prolongation of the reddish brown c. s. VII.

Larva on sallow?

Has occurred near Manchester and near Lanark.

Genus 3. HYPERMECIA.

Imago: antennæ simple; palpi longer than the head; fore-wings narrow, the costa scarcely arched at the base, the apex obtuse.

H. AUGUSTANA. $6''' - 6\frac{1}{2}'''$. F.-w. ochreous-grey; the b. p. darker, reaching nearly to the middle of the wing, sometimes indistinct; c. f. reddish brown, uniting with a prolongation of the reddish brown c. s.; the costal patch before the latter is sometimes straw-coloured. VI, VII.

Larva pale yellow; spots hardly perceptible; head black; 2nd seg. pale brown. Between united leaves of sallow and willow. V, VI b.

Generally common.

Genus 4. EULIA.

Imago: palpi rather longer than the head; thorax stout; fore-wings twice as long as broad; costa regularly arched, apex acute.

E. MINISTRANA. 9'''—10''. F.-w. glossy, pale ochreous, clouded with rust-colour; c. f. very indistinct; apex dark ferruginous (sometimes much suffused with ferruginous). VI.

Larva green. On hazel?

Generally common.

Genus 5. BRACHYTÆNIA.

Imago: fore-wings hardly twice as long as broad; costa regularly arched; the apex rather obtuse; the first half of the central fascia forms a triangular costal spot.

We have two species, readily distinguished by the different ground-colours.

B. SEMIFASCIANA. 8'''—10'''. F.-w. *grey*, with a slender, angulated, dark fascia near the base, not reaching the inner margin; on the middle of the costa a triangular dark grey spot. VII, VIII.

Larva in shoots and catkins of willows. V.

Not scarce in the South of England.

B. HARTMANNIANA. 8'''—9'''. F.-w. *whitish*, clouded with grey along the inner margin; a slender, grey, angulated fascia near the base, and a triangular dark grey spot on the middle of the costa. VII e, VIII b.

Near London, on the trunks of willows; scarce.

Genus 6. ANTITHESIA.

Imago: palpi longer than the head; thorax with a tuft behind; fore-wings more than twice as long as broad; costa regularly arched; apex obtuse; the apical third is white or ochreous.

We have 14 species in this genus, which may be thus tabulated:—

A. The dark basal portion of the wing scarcely reaches beyond the middle of the costa.

B. The apical third white.

- C. Space between the b. p. and c. f. white on the costa.
 D. A white streak along the fold. *A. Corticana*.
 DD. No white streak along the fold. *A. praelongana*.
 CC. No white space on the costa between the b. p. and c. f.
 E. Extreme tip of the wing dark grey. *A. Pruniana*.
 EE. Extreme tip of the wing not dark grey.
 F. Two or three black dots on the outer edge of the c. f. *A. cynosbatella*.
 FF. No black dots on the outer edge of c. f.
 G. Costa much arched. *A. Capraëana*.
 GG. Costa slightly arched. *A. Betuletana*.
 BB. The apical third ochreous.
 H. Space between the b. p. and c. f. very pale on the costa. *A. dimidiata*.
 HH. Space between the b. p. and c. f. not pale on the costa. *A. ochroleucana*.
 AA. The dark basal portion of the wing reaches decidedly beyond the middle of the costa.
 I. Hind-wings of the male pale. *A. marginana* and *A. similana*.
 II. Hind-wings of the male dark.
 K. Apical third ochreous. *A. Gentiana*.
 KK. Apical third white. *A. sauciana* and *A. sellana*.
 KKK. Apical third grey. *A. ustulana*.

A. CORTICANA. 9'''—10'''. F.-w. with the basal two-thirds blackish; the costa at base and before the c. f. white, and a white streak from the base along the fold; apical third white, clouded with pale grey. VI, VII.

Larva on birch?

Rather local. West Wickham, Epping Forest, &c.



A. BETULETANA. 9'''—10'''. F.-w. with the basal two-thirds brownish black (the space between the b. p. and c. f. rather paler); apical third white, or whitish ochreous clouded

with pale grey; the outer edge of c. f. scarcely indented. VII, VIII.

Larva on birch. V.

Not rare, and widely distributed.

A. CAPREANA. 8'''—9'''. F.-w. with the basal two-thirds brownish, the space between the b. p. and c. f. paler, and whitish on the costa; apical third white (projecting like a beak into the dark portion), clouded with pale grey, and with a grey blotch, in which are two or three black dots near the middle of hind-margin. VII.

Larva bright green. In shoots of willow. V.

West Wickham, Epping Forest, Swanscombe, &c.

A. PRÆLONGANA. 8'''—9'''. F.-w. with the basal two-thirds blackish grey, the space between the b. p. and c. f. paler, and forming a white blotch on the costa; apical third white clouded with grey, the tip dark grey. V, VI.

In the South, at West Wickham and Dulwich; in Scotland, at Arran, and Torwood: not common.

A. OCHROLEUCANA. 9'''—10'''. F.-w. with the basal two-thirds dark dull brown, the space between the b. p. and c. f. paler; the apical third pale ochreous, clouded with grey towards the hind-margin, and with two or three dark grey spots near the outer edge of the c. f. VI, VII.

Larva on rose. V, VI.

Not scarce in gardens in the South of England.

A. CYNOSBATILLA. 7'''—10'''. F.-w. with the basal two-thirds brownish black, the space between the b. p. and c. f. paler, and on the fold with a white spot on its outer edge; apical third white, clouded with grey towards the hind-margin; two or three distinct black spots project from the edge of the c. f. VI.

Larva dull olive-green, the spots black; head and 2nd seg. black. On hawthorn, sloe, &c. V.

Abundant everywhere.

A. PRUNIANA. 6½'''—8'''. F.-w. with the basal two-thirds brownish black, the space between the b. p. and c. f. paler, and with a white spot on its outer edge on the fold; apical

third white, clouded with grey posteriorly; the hind-margin dark grey; three or four small dark grey spots lie near the middle of the c. f. VI, VII.

Larva on sloe. V.

Abundant everywhere.

A. DIMIDIANA. $7'''-7\frac{1}{2}'''$. F.-w. with the b. p. and c. f. purplish grey, the intervening space reddish white on the costa, grey on the inner margin; the apical third reddish white clouded with pale grey, with a conspicuous black spot on the outer edge of the c. f. VI.

Larva on *Myrica Gale* (bog myrtle).

Not rare in boggy places in the North of England and Scotland.

A. MARGINANA. $7'''-8'''$. F.-w. with the basal two-thirds dark brown, the space between the b. p. and c. f. paler and more greyish brown; apical third whitish ochreous, with the tip and hind-margin dark brown; h.-w. of the male whitish, with a greyish brown border; of the female entirely fuscous. V, VI.

Larva reddish white; head and 2nd seg. black (*Gu.*) On the pith of teasle.

Not common, but widely distributed.

A. SIMILANA. $6'''$. F.-w. with the basal two-thirds dark brown, the space between the b. p. and c. f. paler, and whitish on the costa and inner margin; the outer edge of the c. f. is nearly straight and well-defined; apical third pale ochreous, clouded with grey; h.-w. of the male whitish, with fuscous border; of the female entirely fuscous. VI.

Near Tunbridge and in the New Forest: scarce.

A. SAUCIANA. $6\frac{1}{2}'''-7'''$. F.-w. with the basal two-thirds bluish black; the outer edge of c. f. with a white indentation above the middle; apical third white, the apex broadly dark grey, and with an oblique grey band in the narrow white portion. VI.

Larva on bilberry (*Vaccinium Myrtillus*).

At Leith Hill, Surrey; and on the Lancashire moors.

A. GENTIANANA. $7\frac{1}{2}'''$ — $9'''$. F.-w. with the basal two-thirds dark brown, mottled with ochreous, especially in the space between the b. p. and c. f.; apical third ochreous, enclosing a grey hooked mark; the hind-margin brownish. VII.

Larva dull yellowish white; head and 2nd seg. black; spots pale olive-green. In teazle heads. XI—III.

Common in the South of England.

A. SELLANA. $6\frac{1}{2}'''$ — $7'''$. F.-w. with the basal two-thirds dark brown, the space between the b. p. and c. f. paler; apical third pale ochreous, with a grey blotch near the middle, the tip brown. VII.

Keymer, in Sussex.

A. USTULANA. $4\frac{1}{2}'''$ — $5'''$. F.-w. almost entirely dark brown, streaked with violet and ochreous, before the apex with a faint golden tinge. VI.

Coombe and Darenth Woods, and in Norfolk.

Genus 7. PENTHINA.

Imago: antennæ simple; thorax tufted behind; anterior wings more than twice as long as wide; the costa slightly arched; the apex obtuse.

P. SALICELLA. $9'''$ — $10'''$. F.-w. white at the base and along the inner margin; a broad brown-black blotch extends along the costa from near the base; the hind-margin is varied with brownish black and blue. VII e, VIII b.

Larva dull red-brown; head and 2nd seg. black; spots black. In folded leaves of willow. V.

Not rare in the South of England.

Genus 8. SIDEREA.

Imago: fore-wings elongate; costa regularly arched, the tip slightly produced; hind-margin concave below the tip.

S. ACHATANA. $6'''$ — $8'''$. F.-w. pale grey; b. p. large, dark brown; c. f. dark brown, interrupted, forming a small

quadrate costal spot and a large triangular dorsal spot; c. s. (prolonged into an oblique fascia) brick-red. VI, VII.

Not scarce amongst hawthorn in the South of England.



Genus 9. DICHELIA.

Imago: fore-wings barely twice as long as broad; costa arched rather abruptly at the base; hind-margin rather obtuse.

D. GROTIANA. $5\frac{1}{2}'''$ — $7'''$. F.-w. ochreous, reticulated with reddish brown; b. p. reddish brown, indistinct; c. f. broad oblique, dark brown; c. s. brown, rarely distinct. VII.

Local, but widely distributed in the South of England.

Genus 10. CENECTRA.

Imago: palpi *three* times as long as the head; fore-wings twice as long as broad; costa abruptly arched at the base; hind-margin rather truncate.

C. PILLERIANA. $8'''$ — $8\frac{1}{2}'''$. F.-w. pale ochreous, darker posteriorly; b. p. only visible on the inner margin, brown; c. f. slightly oblique, brown; c. s. irregularly produced towards the anal angle, brown. VII.

Larva in the seeds of *Iris fœtidissima*.

Scarce. Near Ventnor.

Genus 11. CLEPSIS.

Imago: palpi twice as long as the head; fore-wings more than twice as long as broad; costa slightly arched at the base; apex acute; hind-margin oblique.

C. RUSTICANA. $6'''$ — $6\frac{1}{2}'''$. F.-w. shining grey, with numerous short ochreous streaks, sometimes with a faint brown spot or two near the centre (female with f.-w. narrower and yellower). VI.

Not rare in fens, marshes, and on boggy moors.

Genus 12. TORTRIX.

Imago: palpi longer than the head (in *Heparana* much longer); fore-wings about twice as long as broad; costa arched abruptly at the base; hind-margin truncate, sometimes concave below the tip.

We have ten species in this genus, which may be thus tabulated:—

- A. F.-w. unicolorous.
- B. F.-w. pale ochreous. *T. icterana*.
- BB. F.-w. brown. *T. Viburnana*.
- BBB. F.-w. green. *T. viridana*.
- AA. F.-w. with distinct markings.
- C. The b. p. not expressed. *T. Forsterana*.
- CC. The b. p. expressed.
- D. H.-w. whitish. *T. dumetana*.
- DD. H.-w. grey.
- E. Face white. *T. cinnamomeana*.
- EE. Face not white. *T. heparana*, *T. Ribeana*, *T. Corylana* and *T. transitana*.

T. ICTERANA. 10'''—1''. F.-w. pale ochreous (in the female more yellowish). VII, VIII.

Larva black, with conspicuous white spots. On various plants. V, VI.

Common, but rather local.

T. VIBURNANA. 9'''—10''. F.-w. brownish, sometimes with faintly darker markings. VII.

Larva on *Myrica Gale* and *Vaccinium*.

Common on moors in the North of England and Scotland.

T. VIRIDANA. 8'''—11'''. F.-w. pale green, with the costal edge sulphur-coloured. VI e, VII.

Larva green, posteriorly yellowish green; spots small, black; head brownish. On oak, hornbeam, &c. V, VI.

Generally abundant.

T. FORSTERANA. 11'''—1'' 1'''.
F.-w. pale greyish brown, reticulated with brown; c. f. brown, interrupted, forming a small costal and a large dorsal blotch; c. s. brown. VI, VII.

Larva on ivy, honeysuckle, &c. III, IV.

Common in the South of England.



T. DUMETANA. 9½'''. F.-w. ochreous-brown, reticulated with brown; b. p. brownish, its hinder edge nearly straight; c. f. dark brown, oblique, broadest on the inner margin; c. s. brown, with a brown line produced from its inner edge towards its anal angle; h.-w. whitish. VII.

Larva on oak.

Monks Wood, Hunts and near Lewes.

T. HEPARANA. 8'''—11'''. F.-w. pale red-brown, with the markings dark red-brown; hind-margin of b. p. rather oblique; c. f. broadest in the middle, its inner edge rather angulated; c. s. rather indistinct; face reddish brown. VI e, VII.

Larva bright green, darker on the back; head green. On various trees, &c.

Not scarce, generally distributed.

T. RIBEANA. 7'''—10'''. F.-w. pale brown, or yellowish brown with darker markings; hind-margin of b. p. nearly straight; c. f. broadest in the middle, but its inner edge not angulated; c. s. small (the dorsal portion of the wing is sometimes clouded with greyish brown). VI, VII.

Larva olive-green or bluish green; spots black; head black or green. On most trees and shrubs. V.

Generally common.

T. CINNAMOMEANA. 9'''—1''. F.-w. reddish cinnamon, with darker markings; hinder edge of b. p. oblique; c. f. broadest below the middle, its inner edge not angulated; c. s. rather small, the space below it generally reticulated; *face white*. VI, VII.

Larva green ; head yellow. On larch and maple. V.
Not common. At Epping, Mickleham, Weybridge, &c.

T. CORYLANA. 9'''—1''. F.-w. ochreous-brown, sometimes tinged with orange, with darker markings and *generally much reticulated* with brown ; hinder edge of b. p. rather oblique ; c. f. broadest on the inner margin ; c. s. rarely well defined. VI e, VII.



Larva green ; head pale green. On hazel, dogwood, &c. V.

Generally distributed, and rather common.

T. TRANSITANA. 7½''' — 11'''. F.-w. shining, greyish brown, with darker markings ; b. p. rather indistinct ; c. f. oblique, distinct, attenuated towards the costa, its hinder edge frequently connected with the c. s. by a short transverse streak. VII.

Larva on elm. V ?

Rather local, but not uncommon.

Family II. PLICATÆ.

Imago : fore-wings rather broad, but frequently twice as long as broad ; in the males, towards the base of the costa is a more or less distinct fold ; between the b. p. and c. s. is frequently a pale dorsal spot.

Larva feeding in united leaves, or in the stems and seeds of plants ; mostly sluggish.

Most of the species of this family occur in the perfect state in the months of June and July ; but, as the larvæ of some feed up in the autumn, a few species appear in the winged state in the spring ; thus, *Phlæodes tetraquetra* and *immun-dana* are to be met with early in May, at which period *Dicro-rampha plumbagana* may be found in chalky places. *Phlæodes crenana* appears as early as the end of March, occurring amongst sallows. At the end of May *Lozotania musculana*

and *Pardia tripunctana* may be observed, announcing the speedy appearance of the greater number of the species of this family. A few species, such as *Pædisca Piceana* and *Solan-driana*, continue to be met with in August and September ; indeed, stragglers of the former may be taken in October.

There are fifteen genera in this family, but they do not readily admit of tabulation ; they are :—

1. LOZOTENIA. 2. DITULA. 3. PTYCHOLOMA. 4. NOTO-
CELIA. 5. PARDIA. 6. SPILONOTA. 7. LITHOGRA-
PHIA. 8. PHLEODES. 9. PÆDISCA. 10. CATOPTRIA.
11. HALONOTA. 12. DICRORAMPHA. 13. COCCYX.
14. CAPUA. 15. CURTELLA.

Genus 1. LOZOTENIA.

Imago: palpi rather longer than the head ; fore-wings about twice as long as wide ; costa abruptly arched at the base, in the male with a fold extending nearly to the middle ; hind-margin generally indented below the tip, which is rather produced upwards.

We have ten species in this genus, in two of which (*Fulvana* and *Rosana*) the sexes are very different. They may be tabulated as follows :—

- A. The basal patch forms an oblique streak from the inner margin.
- B. Tip of hind-wings orange. *L. fulvana* (male).
- BB. Tip of hind-wings not orange.
- C. Inner edge of c. f. much indented. *L. Roborana*.
- CC. Inner edge of c. f. hardly sinuous. *L. Xylosteanæ*.
- AA. The basal patch does not form an oblique streak from the inner margin.
- D. Hind-wings grey, tipped with orange. *L. fulvana* (female) and *L. Rosana* (female).
- DD. Hind-wings grey.
- E. The basal patch appears only as a grey spot on the fold. *L. Rosana* (male).

EE. The basal patch is distinctly margined across the wing. *L. Sorbiana*.

EEE. The basal patch hardly defined at all.

F. Fore-wings grey. *L. musculana*.

FF. Fore-wings reddish ochreous. *L. unifasciana*.

DDD. Hind-wings grey at the anal angle, whitish towards the costa. *L. semialbana*.

DDDD. Hind-wings whitish. *L. latiorana* and *L. costana*.

L. SORBIANA. 11'''—1' 1''' . F.-w. greenish grey, reticulated with darker posteriorly; the b. p. distinct, but not as dark as the oblique c. f., of which the outer edge is ill-defined; c. s. dark grey, sometimes uniting with the c. f. VI.

Larva on hazel, birch, oak. V.

Darenth Wood, Epping Forest, &c. : not rare.

L. MUSCULANA. 7'''—9''' . F.-w. dull grey; b. p. hardly darker, very indistinct; c. f. dark grey-brown, broadest towards the inner margin; c. s. rather small, dark grey-brown. V.

Larva between united leaves of bramble. IX.

Generally common.

L. LATIORANA. 8'''—9''' . F.-w. pale ochreous, the markings pale brown; the c. f. is broadest in the middle, below which it is suddenly paler; the c. s. distinct, pale brown, its inner edge rather produced. (Female paler and spotless.) VII.

Taken in a salt-marsh at Southend, by Mr. Stevens.

L. SEMIALBANA. 8½'''—9''' . F.-w. pale yellowish ochreous; the b. p. forms a pale brownish cloud on the margin; the c. f. is oblique, brownish, broadest and darkest below the middle; c. s. pale brownish, with a line from its edge towards the anal angle. VII.

Scarce and local. At Darenth, Mickleham, &c.

L. COSTANA. 8½'''—11''' . F.-w. glossy, straw-colour or pale ochreous, with brown markings; c. f. very distinct at the costa, but suddenly becoming paler before the middle of the wing; c. s. distinct; below it are two or three dark brown dots. VI, VII.

Larva dull dark brown; head black. On most marsh-growing plants. V.

Generally common.

L. UNIFASCIANA. $6\frac{1}{2}''$ — $8''$. F.-w. reddish ochreous, with a pale reddish brown c. f., but no other distinct markings; the b. p. forms a pale reddish brown spot on the inner margin; hind-margin clouded with reddish brown. VI, VII.

Larva on privet.

Generally common.

L. FULVANA. Male. $8''$ — $11''$. F.-w. reddish grey, posteriorly reddish ochreous; b. p. a blackish brown oblique streak from the inner margin, edged with yellowish; c. f. dark brown, very narrow, on the costa edged with yellowish. *Female.* $10''$ — $1'' 1''$, F.-w. dull reddish ochreous; the b. p. reddish grey; c. f. reddish grey, almost linear in the middle, swelling out to a large blotch on the inner margin; c. s. reddish grey, but not sharply defined. VI, VII.

Larva green, darker on the back; head rough, brown; spots black. On oak, bramble, &c. V.

Not scarce, and widely distributed.

L. ROBORANA. $10''$ — $1''$. F.-w. brownish grey, with rich dark brown markings; the b. p. forms an oblique streak from the inner margin; the c. f. very narrow on the costa, becomes very broad before it reaches the middle of the wing; c. s. continued near the hind-margin to above the anal angle. VII.

Rather local.

At Darenth, Ardley, and Wickham Woods.



L. XYLOSTEANA. $8''$ — $11''$. F.-w. pale brown or ochreous-brown; a deep red-brown oblique streak from the base of the inner margin, edged with yellowish, represents the b. p.; the c. f. narrow on the costa, gradually expanding, is reddish brown edged with yellowish; it sometimes unites with the darker c. s., beyond which are two reddish brown blotches, one at the apex, the other at the anal angle. VII.

Larva dull olive; head black; spots white, with black centres. On oak, honeysuckle, &c. V.

Generally common.

L. ROSANA. 7'''—10'''. F.-w. brownish grey, much reticulated with darker; the edge of the b. p. is most distinct, swelling out to a dark spot on the fold; c. f. narrow on the costa, broad on the inner margin; c. s. with a distinct line from its outer edge to the anal angle. VI, VII.

Larva dark olive-green; spots white; head brownish. On almost every tree or shrub.

Abundant everywhere.

Genus 2. DITULA.

Imago: antennæ of the male pubescent; fore-wings more than twice as long as wide; costa regularly arched, in the male with a broad rounded fold at the base; hind-margin rather rounded.

D. ANGUSTIORANA. 6'''—9'''. *Male.*—F.-w. greyish ochreous, with brown and black-brown markings; b. p. black-brown; c. f. brown, sinuous, slender on the costa, broadest on the inner margin; c. s. black-brown, reaching to the anal angle. *Female* reddish ochreous, with reddish brown markings; the b. p. forms an oblique streak from the inner margin; the c. s. is dark reddish brown, reaching nearly to the anal angle; between it and the c. f. on the costa is a pale yellow spot. VII, VIII.

Larva greenish grey; spots rather paler; head shining green. On most trees. IV, V.

Generally abundant.

Genus 3. PTYCHOLOMA.

Imago: palpi as long as the head; fore-wings more than twice as long as broad; costa in the male broadly folded to the middle, and then straight,—in the female regularly arched; hind-margin rather truncate.

P. LECHEANA. $6\frac{1}{2}'''$ — $9\frac{1}{2}'''$. F.-w. dull brownish, more or less ochreous towards the base; no distinct markings, but the edges of the c. f. indicated by bluish silvery lines. VI, VII.

Larva on oak, elm, &c. V.

Generally common.

Genus 4. NOTOCELIA.

Imago: palpi twice as long as the head; fore-wings twice as long as broad; costa regularly arched in both sexes, in the male with a fold extending to the middle; hind-margin slightly concave.

N. UDMANNIANA. $7'''$ — $9'''$. F.-w. pale grey varied with darker, with a conspicuous chocolate-coloured triangular blotch on the inner margin beyond the middle. VI, VII.

Larva dull reddish brown; head black. In shoots of bramble. IV, V.

Generally common.



Genus 5. PARDIA.

Imago: palpi longer than the head; fore-wings more than twice as long as broad; costa in the male folded to the middle, then arched; hind-margin rather oblique.

P. TRIPUNCTANA. $8'''$ — $10'''$. F.-w. smoky brown at the base, this colour reaching along the costa to beyond the middle, then whitish, with some grey clouds; oc. lead-colour, with three or four black dots; tip dark grey; *palpi* yellow. V e, VI.

Larva reddish brown; head black. On rose, &c.

Very abundant in gardens, hedges, &c.

Genus 6. SPILONOTA.

Imago: palpi longer than the head; fore-wings more than twice as long as broad; costal fold reaching to the middle; hind-margin nearly straight.

In this genus we have four species, which have considerable resemblance to each other. *Amænana* may generally be recognised by its rosy tint, and the clear pale space beyond the c. f.; *Trimaculana* is known by the suffused central portion of the wing; and *Rosæcolana* is distinguished by the peculiarly rounded costa.

S. ROBORANA. 8''—10''. F.-w. with the b. p. brown; a brownish streak running along the costa to beyond the middle, then white, much speckled with grey; tip reddish brown; oc. leaden grey, edged internally with dark brown; palpi brown. VI, VII.



Larva dull brown, with black head. In rose shoots. IV, V.

Generally common.

S. ROSÆCOLANA. 8'''—10'''. Extremely like the preceding, but the costa more rounded and more regularly spotted. VII.

Not rare amongst roses.

S. TRIMACULANA. 7'''—8'''. F.-w. with the b. p. dark grey-brown, then white mottled with grey; c. f. brown, tip reddish brown; oc. lead-colour, preceded by two black spots. V, VI.

Larva on hawthorn.

Generally common, in hedges.

S. AMÆNANA. 8'''—9'''. F.-w. *pale rosy*; b. p. greyish brown; c. f. grey; tip reddish grey; oc. indistinct, rosy, some small black spots on its outer and a large black spot on its inner edge. VII, VIII.

Not rare on the coast, amongst *Rosa spinosissima*.

Genus 7. LITHOGRAPHIA.

Imago: palpi longer than the head; fore-wings three times as long as broad; costa in the male folded to the middle, arched; hind-margin concave.

We have four species in this genus; they do not seem to admit of tabulation; indeed, two of them are excessively

variable; *Campoliliana* may, however, be distinguished by the distinct white band before the c. f., and *Cinerana* by its uniform grey colour.

L. CAMPOLILIANA. 5'''—6''' . F.-w. white; b. p. and c. f. grey; oc. bluish, enclosing three black dots; extreme tip ferruginous. VII.

Not scarce amongst salallows.

L. CINERANA. 6'''—8''' . F.-w. pale grey, mottled with darker; b. p. especially dark grey at its outer edge; oc. indistinct, pale lead-colour; apical spot distinct, blackish. VII, VIII. (This is sometimes reputed only a variety of the following, but appears distinct).

On the trunks of poplars. Not scarce.

L. NISELLA. 6'''—6½''' . F.-w. grey, more or less tinged with ochreous, generally with a broad rust-coloured blotch on the inner margin; b. p. dark brown; c. f. obliquely placed, reaching to the oc., which is rather indistinct. VII, VIII.

Larva in the catkins of salallows and poplars.

Generally distributed.

L. PENKLERIANA. 6'''—7''' . F.-w. reddish brown, with a rather conspicuous whitish band before the c. f.; beyond the latter is a faint oc., of a leaden grey colour, enclosing three black spots. VI, VII.

Common among alder, hazel, &c.

Genus 8. PHLEODES.

Imago: palpi longer than the head; fore-wings three times as long as broad; costa of the male folded to the middle, regularly arched; hind-margin slightly concave.

We have four species in this genus.

P. TETRAQUETRANA. 6½'''—7''' . F.-w. pale grey-brown; b. p. darker, followed by a whitish blotch on the inner margin; oc. very indistinct, with a black dot on its inner edge near the inner margin. IV, V.

Larva yellowish green; spots whitish; head brown. On birch and alder. IX.

Generally distributed; not scarce.

P. IMMUNDANA. $6'''-6\frac{1}{2}'''$. Closely allied to the preceding, but f.-w. narrower; the outer edge of b. p. more angulated, hence the inner edge of the pale dorsal spot more oblique. IV, V, and VIII, IX.

Larva greenish grey; head brownish. In rolled-up leaves of birch.

Widely distributed, but scarce.

P. DEMARNIANA. $6'''-7'''$. F.-w. white, with the b. p. and oblique c. f. dark grey-brown; the costa clouded with grey; apical spot ferruginous. VI, VII.

At West Wickham and Darenth Woods, &c. Amongst birch.

P. CRENANA. $6\frac{1}{2}'''-8'''$. F.-w. shining, dark grey along the costa, whitish or rust-colour along the inner margin, with two rounded projections into the dark portion of the wing. III, IV.

Larva whitish green; head pale brown. On willows and willows.

Taken by Mr. T. Wilkinson, near Scarborough.

Genus 9. PÆDISCA.

Imago: palpi longer than the head, densely clothed with scales; fore-wings three times as long as broad; costa arched, in the male folded to the middle; hind-margin truncate.

We have four species of this genus, two of which are excessively variable; hence it is not easy to form a table of the genus.

P. PICEANA. $8'''-9\frac{1}{2}'''$. F.-w. glossy, reddish brown, with ill-defined darker markings; c. f. the most distinct, obliquely placed; sometimes the inner margin is broadly whitish; other specimens have an orange streak along the centre of the wing. VI e—X.

Larva in catkins and leaves of willow. V.

Widely distributed, and not scarce in marshy places.

P. STABILANA. 10"—11". F.-w. dull, pale reddish brown, with dark brown markings and streaks; the outer edge of the b. p. forms on the inner margin an oblique dark brown streak; in the middle of the wing it meets a similar streak from the anal angle; the space included between these on the inner margin is paler than the rest of the wing. VII.

Whittlesea Mere.

P. SOLANDRIANA. 9"—10". F.-w. rather glossy, pale greyish ochreous, with a large dark brown blotch occupying nearly the whole of the inner margin; in some specimens the ground-colour of the wings is pale reddish brown, with the angulated outer edge of the b. p. and the oblique c. f. darker; in other specimens the ground-colour is dark reddish brown, with a conspicuous triangular white blotch on the middle of the inner margin. VII, VIII.



Larva dirty white, with a faint tinge of green; head and 2nd seg. black. On birch, hazel, &c. V.

Common, and generally distributed.

P. OPHTHALMICANA. 10"—11". F.-w. rather glossy, smoky black, with leaden grey streaks at the anal angle; on the inner margin near the base is an irregular black blotch edged with ochreous, and towards the anal angle is a roundish ochreous spot edged with black. VII e—IX.

Rather local; it occurs in the South of England and mid-land counties, amongst poplars.

Genus 10. CATOPTRIA.

Imago: palpi longer than the head; fore-wings more than twice as long as broad; costa regularly arched, in the male folded at the base, tip rather acute; hind-margin slightly concave.

In this genus we have six species, very closely related to each other; and on this account we are unable to tabulate them satisfactorily.

C. SCOPOLIANA. 8'''—10'''. F.-w. glossy, pale ochreous; lower half of b. p. ochreous-brown; c. f. rather angulated, brownish; a brownish streak running from it over the oc. to the hind-margin; the oc. has a pearly edge, and encloses two or three black lines. VI, VII.

Larva yellowish white. On the seeds of thistles. IX.
Generally distributed, and not uncommon.

C. FULVANA. 10'''—10½'''. F.-w. ochreous, with the lower half of the b. p. and the angulated c. f. dark ochreous; the oc. has a pearly border, and encloses three interrupted black lines. VIII.

Widely distributed, but rather local.

C. HOHENWARTHIANA. 7'''—9'''. F.-w. glossy, ochreous; lower half of b. p. pale reddish brown; c. f. very ill-defined, pale or dark reddish brown; oc. with a pearly border, enclosing three interrupted black lines. VII, VIII.

Generally common, amongst thistles.

C. PARVULANA. 5½'''—6'''. F.-w. glossy, dark fuscous; the b. p. and c. f. slightly darker; oc. with a pearly border, enclosing three black streaks. VII.

Taken in the Isle of Wight, by Mr. Bond.

C. CECIMACULANA. 8½'''—10½'''. F.-w. greyish ochreous, completely irrorated with short transverse streaks; c. f. indistinct, forming only a blotch on the inner margin before the pale ochreous oc., which is ill-defined, and contains only two black dots. VII, VIII.

Common at Headley Lane, near Mickleham.

C. EXPALLIDANA. 7½'''—8½'''. F.-w. dark ochreous or brownish ochreous towards the costa, ochreous or pale ochreous along the inner margin; oc. indistinctly margined, pale ochreous or pale yellowish, enclosing two black lines. VII.

Widely distributed, but not common. Appears to frequent marshy places.

Genus 11. HALONOTA.

Imago: palpi rather longer than the head; fore-wings twice as long as broad; costa slightly arched, in the male, beyond the fold; apex rather obtuse; a pale blotch mostly on the middle of the inner margin.

We have nine species in this genus, which may be thus tabulated:—

A. F.-w. with two distinct white dorsal blotches. *H. bimaculana*.

AA. F.-w. with *one* distinct white dorsal blotch.

B. The blotch of irregular form. *H. fenella*.

BB. The blotch almost quadrangular. *H. trigeminana*,
H. Cirsiana, *H. scutulana*, *H. Brunnichiana* and *H. tetragonana*.

AAA. F.-w. with *no* white dorsal blotch.

C. A triangular dark brown patch beyond the middle of the inner margin. *H. turbidana*.

CC. No triangular dark brown patch beyond the middle of the inner margin. *H. inopiana*.

H. BIMACULANA. 8'''—10'''. F.-w. dull brown, streaked with darker, with two large white blotches, one in the middle of the inner margin and one at the anal angle. VI—IX.

Widely distributed, but rarely common.

H. TRIGEMINANA. 6'''—7'''. F.-w. ochreous, with numerous transverse dark brown streaks; the hinder edge of the b. p. and the c. f. brown; between these is a large whitish blotch on the inner margin; oc. pale greyish, enclosing three short black streaks; beyond the middle of the costa are four distinct pairs of short white streaks. VI, VII.

Widely distributed, but not common.

H. CIRSIANA. 6½'''—8'''. F.-w. greyish brown; a large white blotch on the middle of the inner margin; oc. leaden grey, whitish towards the anal angle, enclosing three or four black dots; extreme tip ferruginous; hind-margin rather truncate. VI, VII.

Larva in stems of thistles and knapweed. X—V.
Generally distributed, and rather common.

H. SCUTULANA. $7\frac{1}{2}'''$ — $9'''$. F.-w. grey-brown, with a large white blotch on the middle of the inner margin; a large roundish white spot at the anal angle, enclosing three black dots, and a small whitish blotch above it just before the ferruginous apex; hind-margin rather oblique (the female is much darker, and the pale blotch at the anal angle is replaced by a greyish oc. very similar to that of the preceding species). VI, VII.



Larva bright pink; head and 2nd seg. black; spots brown. In stems of thistles. X—V.

Widely distributed, and rather common.

H. BRUNNICHIANA. $7'''$ — $9'''$. F.-w. ochreous-brown or greyish brown, with numerous irregular darker markings; a conspicuous white blotch on the middle of the inner margin, rather obliquely placed; oc. elongate, edged with bluish, enclosing six or seven black dots. VI, VII.

Larva in the flower-stems of coltsfoot.

Common, and generally distributed.

H. TETRAGONANA. $6\frac{1}{2}'''$ — 7 . F.-w. brown-black, posteriorly with some transverse bluish streaks; on the middle of the inner margin is a conspicuous triangular white spot; in it, near its outer edge, is a small dark brown spot on the inner margin. VII.

Rather a scarce species, but widely distributed.

H. TURBIDANA. $10'''$ — $11'''$. F.-w. brown, with indistinct darker markings, the best-defined being the outer edge of the b. p. on the inner margin; a triangular blotch beyond the middle of the inner margin, and an oblique band towards the tip. VI, VII.

Amongst butter-burr.

Local. Edinburgh; Carlisle; and Chudleigh, Devon.

H. INOPIANA. 9'''—10''' . F.-w. dull ochreous-brown, with faintly darker markings, but very indistinct; a black dot on the disk beyond the middle. VII.

Amongst *Inula dysenterica*.

Widely distributed in the South and West of England.

H. FÆNELLA. 10'''—1'' . F.-w. rich chocolate-brown, with a conspicuous white dorsal spot, of the form of a bird's head and neck; at the anal angle is a leaden grey oc., containing a few black dots. VI, VII.

Larva yellowish white; head brown; 2nd seg. paler. In the stems and roots of mugwort. X—IV.

Widely distributed in the South of England.



Genus 12. DICRORAMPHA.

Imago: palpi longer than the head; fore-wings more than twice as long as broad; the costal fold of the male reaching to the middle; hind-margin slightly indented below the tip; the dorsal blotch sometimes nearly unicolorous with the remainder of the wing, sometimes pale yellow.

This genus contains nine British species, the first four of which may be very easily recognised, but the characters of the remaining species are less easily distinguished.

D. PETIVERELLA. $4\frac{1}{2}$ '''— $6\frac{1}{2}$ ''' . F.-w. pale olive-brown, more greyish towards the base; on the middle of the inner margin is a *curved pale yellow* blotch (sometimes intersected by the dark ground-colour); on the costa, beyond the middle, are several short pale yellow streaks, and immediately before the hind-margin are four or five black dots. VI, VII.

Larva pinkish white; head yellowish brown. In the roots of yarrow (*Achillea Millefolium*). X—IV.

Generally distributed, and very common.

D. SEQUANA. $4\frac{1}{2}$ '''— $5\frac{1}{2}$ ''' . F.-w. greyish brown, paler towards the base; on the middle of the inner margin is a *nearly straight whitish* blotch (*broad*er and *paler* than in *D.*



Petiverella); on the costa, beyond the middle, are several short whitish streaks; the apical portion of the wing, much clouded with ochreous, has three black dots before the hind-margin. VI.

Widely distributed, and common where it occurs, but more local than the preceding.

D. POLITANA. $6\frac{1}{2}'''$ — $7'''$. F.-w. *brownish ochreous*; the broad and rather indistinct dorsal blotch is paler; the costa, beyond the middle, with several short pale yellow streaks; three black dots precede the hind-margin. VI.

Not very common. Occurs in grassy places near London and in Yorkshire, &c.

D. ALPINANA. $7'''$ — $7\frac{1}{2}'''$. F.-w. greyish brown, posteriorly much streaked with yellow; on the middle of the inner margin is a large curved yellow blotch, which sometimes emits yellow streaks towards the hind-margin; the costal streaks beyond the middle, and the extreme apex, dark yellow; three black dots before the hind-margin. VII.

Formerly at Charlton, amongst tansy.

D. SIMPLICIANA. $6'''$ — $7\frac{1}{2}'''$. F.-w. *rather broad*, dull greyish brown, paler along the costa, with a *large* triangular pale grey blotch on the middle of the inner margin, *sharply defined on its anterior edge*; the costa beyond the middle with short pale streaks; three black dots before the hind-margin. VI, VII.

Larva yellowish white; head yellowish brown. In roots of mugwort (*Artemisia vulgaris*). X—IV.

Rather local. Charlton, Greenhithe, Margate, near Croydon, &c.

D. TANACETI. $6\frac{1}{2}'''$ — $7'''$. F.-w. pale greyish brown, much irrorated with ochreous scales; on the middle of the inner margin is a paler, rather indistinct, triangular blotch; on the costa, beyond the middle, are several short pale streaks, and in the apical portion of the wing are faint indications of lustrous streaks; h.-w. *grey*. VII.

Taken amongst tansy, near Crewe, by Mr. Thompson.

D. PLUMBAGANA. 6'''—7½'''. F.-w. pale greyish brown, much irrorated with ochreous scales; on the middle of the inner margin is an indistinct ill-defined pale blotch; along the costa are several short pale streaks, from which proceed some leaden-coloured streaks; before the hind-margin are three or four black dots; h.-w. *brownish*. V—VII.

Widely distributed, but not very common.

D. ACUMINATANA. 5'''—6'''. F.-w. *rather pointed* (the tip being somewhat produced), pale greyish brown, *darker on the edges* of the pale grey, triangular, dorsal blotch; the costa is streaked with whitish grey, and some black dots precede the hind-margin. VIII.

Not scarce. Charlton, Mickleham, &c., and in the North of England.

D. CONSORTANA. 4½'''—5'''. F.-w. dull greyish brown; on the middle of the inner margin is a small, rather curved, triangular whitish blotch, *in which are two or three grey-brown streaks*; on the costa, beyond the middle, are several short whitish streaks, terminating in lead-coloured streaks; before the hind-margin are several black dots. (This is the smallest British species in the genus). VII, VIII.

Mickleham and near Croydon, also near Manchester.

Genus 13. COCCYX.

Imago: palpi scarcely longer than the head; fore-wings more than twice as long as wide; the costa slightly arched, the fold, in the male, extending to the middle; the tip rather pointed; hind-margin slightly concave.

As this genus is now restricted, it contains but three British species, which may be thus recognised:—

A. F.-w. with more than two distinct pale fasciæ. *C. Hyrciniana*.

AA. F.-w. with only two distinct pale fasciæ.

B. The pale fasciæ broad and simple. *C. finitimana*.

BB. The pale fasciæ slender, the posterior one furcate on the costa. *C. distinctana*.

C. FINITIMANA. $5\frac{1}{2}'''$. F.-w. silvery whitish, speckled with grey, and with bronzy brown markings; the b. p. sharply defined and angulated at its posterior edge; in the middle is a rather oblique well-defined c. f., narrowest on the costa; c. s. produced towards the anal angle. VII.

Rannoch, in Perthshire.

C. DISTINCTANA. $5\frac{1}{2}'''$ — $6'''$. F.-w. pale grey-brown, with basal patch and fasciæ of a rich golden brown; b. p. sharply defined posteriorly, and slightly undulated; c. f. distinct, narrowest on the costa; tip golden brown, with pale streaks on the costa; *cilia with no white dashes*. VI.

Amongst Scotch fir, at Braithwaite, near Windermere.

C. HYRCINIANA. $5\frac{1}{2}'''$ — $6'''$. Very variable. F.-w. dull whitish, more or less suffused with brownish patches or streaks; *in the cilia are two white dashes*, one below the tip, the other at the anal angle. V, VI.

A very abundant species. Amongst fir trees.

Genus 14. CAPUA.

Imago: palpi longer than the head; fore-wings twice as long as wide; the costa arched; the fold, in the male, scarcely reaching to the middle; tip rather pointed.

C. OCHRACEANA. $6'''$ — $6\frac{1}{2}'''$. F.-w. dull greyish ochreous, with pale fuscous markings, forming an indistinct c. f. before the middle, and a c. s. beyond the middle. V, VI.

Larva on hornbeam?

Widely distributed, and not scarce.

Genus 15. CARTELLA.

Imago: palpi nearly twice as long as the head; fore-wings nearly three times as long as broad; the costa arched; the costal fold, in the male, extending only one-third from the base; hind-margin rather rounded.

C. BILUNANA. $6\frac{1}{2}'''$ — $8'''$. F.-w. chalk-white, with faint greyish clouds, and with two conspicuous dark grey blotches

on the inner margin, one before the middle, the other towards the anal angle. VI.

Larva in the catkins of birch. IV.

Widely distributed, and rather common.

Family III. ANCHYLOPERIDÆ.

Imago: fore-wings comparatively narrow, almost always more than twice as long as broad; the costa not folded at the base, nor obtusely rounded; the tip is frequently produced, forming a small hook.

Larva feeding mostly in united leaves, sometimes under the bark of trees, sometimes in the stems of rushes.

It is in the three months of May, June and July that the greater number of the species of this family appear in the perfect state, but very few are to be met with in August, and only one species, *Dictyopteryx contaminana*, is to be met with in autumn. These insects seem mostly to frequent woods and bushy places, but many of them are common garden insects and of universal occurrence. Early in May the little *Hemerostia Rheediella* may be seen flying in the sunshine amongst the blossoms of the apple and hawthorn; and when the season is a little further advanced the pretty *Anchylopera Lundana* may be noticed on flowery banks, whilst the smaller and less conspicuous *A. comptana* swarms on the short turf of the chalk hills of the South. In the following month we are constantly meeting with *Hedya ocellana* amongst fruit trees, *H. dealbana* amongst oaks and salallows, *H. Aceriana* amongst poplars, *H. trimaculana* amongst elms, *Bactra lanceolana* amongst rushes, *Argyrotoza Conwayana* amongst privet, *Dictyopteryx Læflingiana* amongst oaks, *Cræsia Bergmanniana* amongst roses, and

C. Forskaleana amongst maple. In July *Steganoptycha nævana* may be found plentifully amongst holly.

We have eight genera in this family, which may be tabulated in the following manner :—

- A. F.-w. black, with the tip reddish orange. Genus 8. **HETEROSIA.**
- AA. F.-w. yellow or ochreous.
 - B. Hind-margin of f.-w. truncate. Genus 7. **CRÆSIA.**
 - BB. Hind-margin of f.-w. oblique or concave.
 - C. A conspicuous pale spot on the middle of the inner margin. Genus 5. **ARGYROTOZA.**
 - CC. No pale spot on the middle of the inner margin. Genus 6. **DICTYOPTERYX.**
 - AAA. F.-w. neither black, yellow nor ochreous.
 - D. F.-w. with the tip pointed, but not produced. Genus 4. **BACTRA.**
 - DD. F.-w. with the tip decidedly produced. Genus 3. **ANCHYLOPERA.**
 - DDD. F.-w. with the tip very slightly produced. Genera—1 **HEDYA.** 2. **STEGANOPTYCHA.**

Genus 1. **HEDYA.**

Imago : palpi as long as the head ; fore-wings nearly three times as long as broad ; the costa regularly arched ; the tip slightly produced ; the hind-margin perceptibly concave.

We have ten species in this genus, which may be thus tabulated :—

- A. The b. p. only forms a triangular spot on the inner margin. *H. Paykulliana.*
- AA. The b. p. well-defined, occupying the whole of the basal portion of the wing.
 - B. The outer edge of the b. p. rounded or slightly angulated. *H. ocellana*, *H. simplana*, *H. dealbana*, *H. neglectana*, *H. Servillana*, *H. Aceriana* and *H. pauperana.*
 - BB. The outer edge of the b. p. acutely angulated. *H. trimaculana* and *H. minutana.*

H. PAYKULLIANA. $6\frac{1}{2}'''$ — $7\frac{1}{2}'''$. F.-w. white clouded with grey; the outer edge of the b. p. forms a distinct triangular black spot on the inner margin; towards the anal angle is an irregular dark grey cloud on the inner margin; apical spot dark grey, preceded by a paler cloud (sometimes the dorsal half of the wing is entirely clouded with grey). VII.



Larva on birch.

Generally distributed, and not uncommon.

H. OCELLANA. $6'''$ — $8'''$. F.-w. whitish, with the b. p. and hind-margin dark grey; the outer edge of the b. p. has its lower half nearly straight, the upper half slopes a little towards the base; on the inner margin, near the anal angle, is a *triangular blackish spot*; oc. leaden grey, enclosing several black dots; (sometimes the whitish ground-colour of the wing is replaced by grey). VI, VII.

Larva brown, with the head and 2nd seg. black. On various trees.

Very common in the South of England, but scarcer towards the North.

H. SIMPLANA. $5\frac{1}{2}'''$. F.-w. dull whitish; the b. p. dark grey, darkest at its outer edge, which is slightly angulated, the lower third being nearly straight, the upper portion sloping a little towards the base; *on the middle of the costa is a quadrate dark grey spot*, and beyond it, on the inner margin, is a paler spot; the hind-margin clouded with pale silvery grey; *head* and face white. V, VI.

Darenth Wood and Cambridgeshire: scarce.

H. DEALBANA. $6'''$ — $6\frac{1}{2}'''$. F.-w. white; the b. p. dark grey, its outer edge angulated, its lower half nearly straight, *the upper half sloping more towards the base than in the allied species*; beyond the middle of the costa is a brown cloud, and a similar cloud lies on the inner margin near the anal angle; between them is a *black spot on the disk*; extreme tip reddish, preceded by several pale grey clouds (in some varieties the ground-colour is much suffused with grey). VI, VII.

Larva on oak and willow.

Common, and generally distributed.

H. NEGLECTANA. $6'''-6\frac{1}{2}'''$. F.-w. white; the b. p. dark bluish grey, its outer edge angulated, with the lower half nearly straight, the upper half sloping a little towards the base; on the middle of the costa is a dark bluish grey cloud; beyond it, on the inner margin, is a paler cloud; extreme tip reddish, preceded by several bluish grey clouds; head dark grey; *face white*. VII.

Larva on willow.

Near London and near Edinburgh: not rare.

H. SERVILLANA. $6'''-6\frac{1}{2}'''$. F.-w. dull yellowish white; b. p. ill-defined, dark bluish brown; on the middle of the costa is an *oblique quadrate spot*; beyond it, on the anal angle, is a paler spot; oc. leaden blue, enclosing some black dots; ~~hind~~ hind-margin clouded with brownish; *h.-w. of the male at the base pearly white* (in the female entirely fuscous). V, VI.

Darenth Wood, Epping, and Cambridgeshire; amongst *sallows*.

H. ACERIANA. $7'''-7\frac{1}{2}'''$. F.-w. dull cream-colour; the b. p. brownish, darker on its hinder edge, which is *slightly* angulated; a pale grey spot on the middle of the costa, and a pale grey spot on the inner margin near the anal angle, are frequently united, forming a c. f.; oc. pale leaden grey, enclosing several small black dots; extreme tip dark grey, preceded by some pale grey clouds. VII.

Larva dirty brown, paler behind; head pale chestnut; 2nd seg. black. In the bark and young shoots of poplars. IV, V.

Common, and generally distributed.

H. PAUPERANA. $7\frac{1}{2}'''-8\frac{1}{2}'''$. F.-w. very long, greyish white; b. p. brownish grey, its hinder edge almost *oblique* and *marked by a black line*; in the middle of the costa is a small grey spot, and a larger brownish spot lies beyond it on the inner margin; hind-margin clouded with bluish grey; no apical spot. III, IV.

In hedges near Darenth Wood, amongst wild rose-bushes: scarce.

H. TRIMACULANA. $6\frac{1}{2}''' - 7\frac{1}{2}'''$. Excessively variable. F.-w. whitish, with the b. p., which is acutely angulated, a broad c. f. and some clouds towards the apex reddish brown, with numerous short darker transverse streaks; oc. indistinct, but with a leaden blue outline. In some specimens the whitish ground-colour is replaced by ochreous, and the other markings are hardly darker, so that but for the short transverse streaks the insect would be of an uniform colour; in other specimens the pale ground-colour is replaced by purplish grey, and the other markings are darker than usual. VI, VII.

Larva pale olive-green; head and 2nd seg. black; spots greyish. On elm. V.

Generally distributed, and very abundant.

H. MINUTANA. $6''' - 6\frac{1}{2}'''$. F.-w. reddish ochreous, with numerous wavy, dark brown, transverse streaks, by which the ordinary markings are much suffused; yet the b. p. may be faintly traced; its hinder edge is acutely angulated; beyond the middle of the wing is a dark wavy c. f. almost black; oc. enclosing several elongate black streaks; apical spot ferruginous. VII.

Larva feeds on the young leaves of the black poplar.

Camberwell, Blackheath, &c.: not scarce.

Genus 2. STEGANOPTYCHA.

Imago: palpi longer than the head; fore-wings more than twice as long as wide; the costa regularly arched; the tip slightly produced; the hind-margin concave.

This genus is of small extent, and contains but three British species.

S. NÆVANA. $6\frac{1}{2}''' - 7'''$. F.-w. pale grey or whitish; b. p. dark brown, enclosing a pale grey spot on the inner margin; its hinder edge is sometimes acutely angulated, sometimes obtusely; beyond the middle is an oblique brown c. f., *from the middle of which a black spot protrudes* towards the apex; oc. large, but rather indistinct. VII, VIII.

Larva dirty green ; head and 2nd seg. black. In shoots of holly.

Common, and generally distributed.

S. GEMINANA. 6''' — 6½''' . F.-w. silvery white, with a silvery greyish tinge ; b. p. reddish brown, its hinder edge much rounded ; c. f. reddish brown ; oc. silvery grey, enclosing a brown streak. (Smaller and more silvery than the preceding).

VI.

Larva on *Vaccinium Myrtillus*.

Not rare. On the moors near Sheffield.

S. USTOMACULANA. 5½''' — 6'' . F.-w. dark grey ; the b. p. and c. f. darker ; a conspicuous pale grey blotch commences on the inner margin near the base, is at first very narrow, but then swells out and reaches nearly half across the wing ; it is bounded posteriorly by the c. f. ; in this blotch, on the inner margin, are several dark grey spots ; apical spot blackish, preceded by some blackish grey clouds. VI.

Larva whitish ; head and 2nd seg. yellowish brown ; spots brown. On *Vaccinium Vitis-Idæa*.

Scotland and the North of England : not scarce.

Genus 3. ANCHYLOPERA.

Imago : palpi shorter than the head ; fore-wings more than twice as long as wide ; costa generally regularly arched, but sometimes rather obtusely arched towards the base ; tip considerably produced, forming in some species a very prominent hook ; hind-margin concave.

The British species of this genus are fourteen in number, and, as the species are not apt to vary, and there is considerable diversity in their markings, it would seem not difficult to construct a table : the following is an attempt at one :—

A. An undulated oblique white streak runs from the inner margin near the base to the apex.

B. F.-w. nearly of a uniform pale grey. *A. subarcuana*.

BB. Costal half of f.-w. reddish brown. *A. diminutana* and *A. biarcuana*.

AA. No undulated oblique white streak.

C. A dark red-brown blotch on the inner margin reaches from the base to beyond the middle.

D. This blotch is sharply defined towards the costa.

A. Myrtillana, *Lundana* and *derasana*.

DD. This blotch shades off gradually towards the costa.

A. obtusana and *A. comptana*.

But the remaining species do not appear to admit of tabulation.

A. RAMELLA. $6\frac{1}{2}'''$ — $8'''$. F.-w. white; the inner margin much clouded with bluish grey; oc. bluish, the slightly-hooked tip ferruginous. VI.



Amongst white poplars. At West Wickham Wood, Darenth Wood, and Dartford Heath.

A. MITTERBACHERIANA. $6\frac{1}{2}'''$ — $7'''$. F.-w. ferruginous, with a darker patch at the base of the inner margin, shading off gradually towards the costa, but sharply defined exteriorly, where it is followed by a whitish line; a more slender dark patch lies towards the costa, in the apical half of the wing; tip slightly hooked. V, VI.

Larva dull green; head yellowish brown; 2nd seg. yellowish; spots pale green. In oak leaves. IX.

Widely distributed, and rather common.

A. UPUPANA. $7\frac{1}{2}'''$ — $8'''$. F.-w. dark smoky brown, with the tip ferruginous; oc. edged with bluish. V, VI.

Larva on oak.

Has occurred in several localities. Black Park, Darenth, West Wickham, Epping, Hastings, Tunbridge Wells: always scarce.

A. SUBARCUANA. $6\frac{1}{2}'''$ — $7\frac{1}{2}'''$. F.-w. pale grey, clouded with darker towards the costa; on the inner margin, near the base, commences a faint undulating whitish line, which, making two slightly curved arches in its course, terminates at the apex. V, VI and IX.

Not common. Near London and in Cambridgeshire.

A. DIMINUTANA. 6'''—7'''. F.-w. grey, towards the costa clouded with ferruginous, and with a distinct ferruginous patch on the costa towards the apex; on the inner margin, near the base, commences a whitish line, which makes *one rather acute arch, and then runs obliquely* to the apex. VI, VII.

Not very common, occurring amongst sallows in the South of England.

A. BIARCUANA. 7½'''—8'''. F.-w. grey on both margins, but with a reddish brown streak along the middle; this is edged beneath by a whitish line which commences on the inner margin near the base, makes *first a rather acute arch, and then a flat one*, terminating in the apex. VI, VII.

Widely distributed, but not common.

A. UNCANA. 9'''—9½'''. F.-w. dark chocolate-brown, rather paler towards the costa, and with a large pale grey blotch on the inner margin from the middle to the hind-margin; in this, *just before the anal angle, is a small curved chocolate-brown streak; on the costa, beyond the middle, is an oblique chocolate-brown streak*; the hooked tip is much produced. V, VI.

Widely distributed, but not very common.

A. MYRTILLANA. 6'''—7'''. F.-w. whitish grey; the costa at the base yellowish; on the inner margin, reaching from the base to beyond the middle, is a brown patch, of rather irregular form, *which swells out abruptly towards its hinder edge*; beyond is a brownish c. f., having on its outer edge two or three short black lines; tip pale brownish, decidedly produced. VI.

Larva on Vaccinium Myrtillus.

Common in the North of England and Scotland.



A. LUNDANA. 5½'''—7'''. F.-w. whitish ochreous, with a rich chocolate-brown patch on the inner margin, reaching from the base to beyond the middle, but not swelling out abruptly; beyond the middle is *an angulated bluish line*, preceded by a chocolate-brown streak from the costa; the hind-margin is *entirely pale reddish brown*; the tip is very decidedly hooked. V and VIII.

Larva greenish grey; head yellowish brown; 2nd seg. paler; spots whitish. Between united leaves of *Vicia sepium* and *Lathyrus pratensis*. IX.

Common, and generally distributed.

A. DERASANA. $6\frac{1}{2}'''$ — $8'''$. F.-w. grey, irrorated with dark grey, with a large dark chocolate-brown blotch on the inner margin, reaching from the base to beyond the middle; beyond it, on the costa, is a large brick-red blotch, which occupies nearly the whole of the apical portion of the wing, *leaving only the oc. grey, with whitish edges*; tip hooked. VI, VII.

Widely distributed, but not common.

A. OBTUSANA. $5'''$ — $5\frac{1}{2}'''$. F.-w. dull grey, with two large reddish brown patches,—one on the inner margin at the base, shading off gradually towards the costa, but sharply defined and edged with whitish posteriorly,—the other on the costa before the apex; oc. grey, with one or two black spots; *tip not produced*. VI—VIII.

Not common, but widely distributed.

A. COMPTANA. $5'''$ — $5\frac{1}{2}'''$. F.-w. grey, with a dark reddish brown blotch at the base of the inner margin, ill-defined towards the costa, but edged with whitish posteriorly; beyond the middle are *two oblique whitish lines*, forming an acute angle; between them is a pale reddish-brown blotch; oc. grey, enclosing a large brown spot; *tip decidedly hooked*. IV, V and VIII.

Abundant on the chalk in the South of England.

A. SICULANA. $7'''$ — $8'''$. F.-w. ochreous-grey, clouded with darker, *with a central whitish streak from the base to beyond the middle*, in which, at its hinder end, is a black streak; below this white streak is an ill-defined brownish streak, reaching to the hooked tip. V, VI.

Larva on *Myrica Gale* and —?

Widely distributed, and not scarce.

A. UNGUICELLA. $6\frac{1}{2}'''$ — $7\frac{1}{2}'''$. F.-w. grey, with a greyish brown b. p. and *a slender, oblique, reddish brown c.f., the outer*

edge of which is angulated and edged with whitish ; beyond are several red brown spots and streaks. V, VI.

Common in heathy places in the North of England and Scotland ; also in the New Forest.

Genus 4. BACTRA.

Imago : palpi longer than the head ; fore-wings more than twice as long as wide ; costa regularly arched ; tip acute ; hind-margin oblique, but not concave.

In this genus we have only three species, one of which, of universal occurrence, *B. lanceolana*, is excessively variable.

B. ULIGINOSANA. $7'''-7\frac{1}{2}'''$. F.-w. pale ochreous, clouded with brownish, and with a few scattered black dots ; the veins paler (the female has a conspicuous, oval, brown spot on the middle of the disk). VI.

In the fens of Cambridgeshire and Huntingdonshire : scarce.

B. LANCEOLANA. $6\frac{1}{2}'''-7\frac{1}{2}'''$. Excessively variable. F.-w. pale grey, grey-brown or ochreous, generally with a darker streak from the base and from the apex, and frequently with a blackish blotch on the middle of the disk ; in some specimens the wings are almost unicolorous, in others the costal half of the wing is strikingly paler. V, VI, VIII, IX.

Larva green ; the head and spots black. In the stems of rushes. IV.

Very abundant, and generally distributed.

B. FURFURANA. $6'''-8'''$. F.-w. ochreous-brown, clouded with dark brown ; the b. p. (rather ill-defined), the c. f. (broad, with its outer edge very irregular), and a somewhat triangular mark on the hind-margin, are the most distinct markings. VI.

A local species, but widely distributed, occurring in Devonshire and near Edinburgh.

Genus 5. ARGYROTOZA.

Imago : palpi twice as long as the head ; fore-wings scarcely twice as long as broad ; costa regularly arched ; tip acute ; hind-margin oblique.

A. CONWAYANA. $5\frac{1}{2}'''$ — $7'''$. F.-w. bright yellow, clouded with orange or brownish, with five or six transverse rows of bluish dots; an unclouded pale yellow spot on the middle of the inner margin is the most conspicuous marking. VI.

Larva on privet.

Common and widely distributed.

Genus 6. DICTYOPTERYX.

Imago: palpi twice as long as the head; fore-wings twice as long as wide; costa arched, rather obtuse at the base; tip produced; hind-margin concave (in *D. Læflingiana* the tip is not produced, and the hind-margin is oblique and not concave).

D. CONTAMINANA. $7'''$ — $9'''$. Very variable. F.-w. straw-colour, reticulated with brown, with a broad brown c. f., uniting with the c. s. and forming a Y-like mark, —or the f.-w. are reddish ochreous, reticulated with reddish brown, with the c. f. and c. s. indistinctly darker, —or the f.-w. are reddish ochreous, with a black spot on the fold near the base, and a large black cloud on the inner margin near the middle. VIII—X.



Larva yellowish green; head brownish. Between united leaves of hawthorn.

Widely distributed, and very abundant.

D. SHEPHERDANA. $6'''$ — $6\frac{1}{2}'''$. F.-w. dull ochreous, reticulated with brownish, with three or four slender oblique brown streaks from the costa to the inner margin. VII.

Larva in tops of *Eupatoria Cannabinum*.

In the Cambridgeshire fens: scarce.

D. LÆFLINGIANA. $8'''$ — $8\frac{1}{2}'''$. F.-w. ochreous-yellow, with three short grey streaks from the costa, one in the middle and one at the end of the b. p., the other being the c. f.; in some specimens these markings reach right across the wing, and sometimes the 2nd and 3rd are confluent, forming a large dark grey blotch on the inner margin; towards the tip are several dark grey spots or clouds. VI—VIII.

Larva pale green ; head, 2nd seg. and spots black. On oak, hornbeam, &c.

Very abundant, and generally distributed.

Genus 7. CRÆSIA.

Imago : palpi longer than the head ; fore-wings twice as long as broad ; costa arched, rather abruptly so towards the base ; hind-margin almost straight.

The three species of this genus may be readily distinguished as follows :—

A. A conspicuous triangular white blotch on the costa. *C. Holmiana*.

AA. No white blotch on the costa.

B. F.-w. with transverse bluish silvery streaks. *C. Bergmanniana*.

BB. F.-w. with no bluish silvery streaks. *C. Forskaleana*.

C. BERGMANNIANA. 6''' — 6½'''. F.-w. pale yellow, reticulated with orange, with a silvery bluish transverse line before, a second beyond the middle, and another on the hind-margin. VI—VIII.

Larva pale yellowish green ; head and 2nd seg. black. On rose. V.

Very abundant, and generally distributed.

C. FORSKALEANA. 5''' — 7'''. F.-w. *pale ochreous, delicately reticulated with darker ochreous*; frequently with an oblique blackish blotch on the middle of the inner margin. VI, VII.

Larva pale transparent yellow ; head and 2nd seg. pale yellowish green ; spots minute, whitish. In folded leaves of maple. VI.

Very common in the South of England.

C. HOLMIANA. 6''' — 6½'''. F.-w. dark orange, towards the hind-margin suffused with lead-colour, *with a conspicuous triangular white spot on the costa* beyond the middle. VI, VII.

Larva yellow ; head pale reddish brown. On rose, apple, &c. Common, and widely distributed.

Genus 8. HEMEROSIA.

Imago: antennæ very stout; palpi longer than the head; fore-wings more than twice as long as wide; costa slightly arched; the tip rather obtuse.

H. RHEEDIELLA. $4\frac{1}{2}'''$ — $5'''$. F.-w. smoky dark brown or blackish; the apical portion of the wing brownish orange, shading gradually into the darker ground-colour. V, VI.

Larva on apple and hawthorn.

Widely distributed and not scarce.

Family IV. PERONEIDÆ.

Imago: fore-wings rather broad, with the costa slightly indented in the middle, and abruptly arched towards the base; on the surface of the fore-wings are usually some tufts of elevated scales.

Larva feeding between united leaves.

This family is comparatively of small extent, only comprising, in this country, twenty-one species, some of which, however, are excessively variable, and many of these varieties were formerly reputed as distinct species. The insects appear in the perfect state at the end of summer and beginning of autumn, and by far the greater number hibernate, and are to be met with throughout the winter and in early spring. One species, *Peronea variegana*, is a common garden insect, of universal occurrence in the months of July and August; and *Paramesia ferrugana* is a common insect in birch woods in autumn, and the 'Notch-wing' (*Teras caudana*) is widely distributed and not scarce; most of the other species will require to be looked for.

There are five genera in this family, which may be thus tabulated :—

- A. F.-w. with no tufts of raised scales. Genus 1. CHEIMATOPHILA.
- AA. F.-w. with tufts of raised scales.
 - B. The costa much indented. Genus 5. TERAS.
 - BB. The costa slightly indented. Genera—2. OXYGRAPHA.
 - 3. PERONEA. 4. PARAMESIA.

Genus 1. CHEIMATOPHILA.

Imago : palpi twice as long as the head ; fore-wings more than twice as long as wide, *with no tufts of elevated scales* ; the tip rather produced ; the hind-margin rounded.

C. MIXTANA. 7''' — 8½'''. F.-w. silvery grey, much streaked with chocolate-brown, and with the outer edge of the b. p., the oblique c. f. and a large c. s. of the same colour ; the edge of the costa reddish. IX, X—IV h.

Widely distributed, and common in heathy places.

Genus 2. OXYGRAPHA.

Imago : palpi longer than the head ; fore-wings more than twice as long as wide, with numerous tufts of raised scales on the surface ; *the costa is furnished with rough fringe before and beyond the middle* ; the tip is rather produced, but the hind-margin is rather truncate.

We have four species in this genus, which may be thus recognized :—

- A. F.-w. green. *O. literana*.
- AA. F.-w. white. *O. Boscana*.
- AAA. F.-w. grey. *O. Scotana* and *scabrana*.

O. LITERANA. 10'''. F.-w *pale green*, sometimes streaked with ochreous, with numerous raised tufts of black and green scales, and here and there some short black streaks. VII—X, and IV h.

Widely distributed, and in the New Forest rather common.

O. SCOTANA. $10'''$ — $10\frac{1}{2}'''$. F.-w. whitish grey mottled with grey, with two *dark grey* clouds on the costa, one before and one beyond the middle; between them is an elongate dark grey streak on the disk; on the inner margin is frequently a reddish cloud near the base; *fringe white*. IX, X.

Amongst birch trees in Perthshire.

O. SCABRANA. $8'''$ — $9'''$. F.-w. grey, slightly freckled with darker; on the costa are two *dull reddish* clouds, one before, the other beyond the middle, and between them, on the disk, is a similar but darker cloud; *fringe grey*. IX—XI.

Larva between united elm leaves. VIII.

Exeter, Worcester, and formerly nearly London.

O. BOSCAN. $7\frac{1}{2}'''$ F.-w. *white*, with two black spots on the costa almost confluent in the middle, and between them a black spot on the disk; there are several other minute grey dots or faint clouds. VII.

Larva between united elm leaves. VI.

Worcester, Darenth Wood, Dover, &c.

Genus 3. PERONEA.

Imago: palpi twice as long as the head; fore-wings more than twice as long as wide, with several tufts of elevated scales on the surface; the costa abruptly arched at the base, and slightly concave in the middle; apex slightly produced; hind-margin rather oblique.

The species of this genus are so excessively prone to vary, that it is impossible to arrange them in such a table as would be of real use to the student. The phases of the more variable species can only be well understood by the possession of an extensive series.

P. SCHALLERIANA. $7'''$ — $8'''$. F.-w. *shining grey*, with a faint ochreous tinge; on the middle of the costa is a large triangular *brick-red* patch, *edged with white on its inner margin*;

outer edge of b. p. faintly indicated on the inner margin. VIII, IX.

Larva on willow, &c.

Not rare near London, also in the North of England and Scotland.

P. COMPARANA. 7'''—9'''. F.-w. dull *greyish ochreous*, with more or less of a reddish tinge; on the middle of the costa is a large *brown or brown-black triangular patch*; a short streak on the inner margin represents the outer edge of the b. p. VIII, IX.

Larva on willow and willow.

Common, and generally distributed.

P. TRISTANA. 7'''—9'''. Variable. F.-w. whitish ochreous, whitish grey, greyish ochreous or reddish grey; on the middle of the costa is a *large reddish brown or brown triangular patch, which reaches almost to the apex of the wing*; b. p. indicated, along the costa and its outer edge, as a small triangular spot, on the inner margin. IX—XI.

Larva pale olive-green, inclining to yellow; head pale yellowish. In puckered leaves of *Viburnum Lantana*. VIII, IX.

Widely distributed, and not rare where its food occurs.

P. RUFANA. 9'''—10'''. F.-w. glossy, pale ochreous or dark ochreous, with a faint triangular grey cloud on the middle of the costa, and a grey blotch on the inner margin beyond the b. p.; the costa broadly whitish to beyond the middle. VII—XI.

Larva on willow(?)

Wimbledon Common, Birch Wood, New Forest, &c.

P. LIPSIANA. 8½'''—9'''. F.-w. glossy, brick-red dusted with violet, especially towards the costa. VIII, IX.

Larva on *Myrica Gale*.

Rannoch, in Perthshire.

P. FAVILLACEANA. 9'''—10½'''. F.-w. pale grey, with a darker transverse line at the outer edge of the b. p. and darker c. f. and c. s.; these markings are sometimes very

distinct, reddish brown,—and the c. f. and c. s. are sometimes confluent on the costa. VII—X.

Larva on beech. VI, VII.

Common, and widely distributed.

P. MACCANA. 9'''—10'''. F.-w. (of the male rather pointed at the tip) glossy, pale or dark grey, with rich chestnut-brown markings; the b. p., c. f. and c. s. tolerably distinct; the b. p. and c. f. hardly ever crossing the fold. IX, X.

Larva on *Vaccinium*.

Rannoch in Perthshire, and Manchester: not common.

P. HASTIANA. 9'''—10'''. Excessively variable. F.-w. glossy, purplish brown, with an oblique whitish grey band between the b. p. and c. f.; on each side of this band are some *small tufts* of raised scales; near the anal angle is a pale grey blotch of irregular form;—or, f.-w. entirely dark greyish purple;—or, f.-w. dark greyish purple, with a white-ochreous dash along the inner margin;—or, f.-w. dark greyish purple, with all the veins pale ochreous;—or, f.-w. dark greyish purple, with an ochreous streak along the centre of the wing;—or, f.-w. pale ochreous, with a few slender longitudinal greyish purple streaks;—or, f.-w. divided longitudinally by a dark line, the lower half being greyish purple, the costal half whitish ochreous, and every conceivable modification or combination of all these varieties occurs. IX, X.

Larva pale green. Between united leaves of willow. VIII, IX.

Common, and generally distributed.

P. UMBRANA. 9'''—10'''. F.-w. glossy, *pale brown, generally with a distinct dark brown streak from the middle of the base to the apex*, slightly forked posteriorly; on the middle of the dark streak is a small pale spot; on the disk are several small tufts of elevated scales. VII—X.

Sanderstead, Mickleham, New Forest, &c.

P. CRISTANA. 9'''—10'''. Excessively variable. F.-w. dark red-brown, with a snow-white streak along the inner margin, and *a large tuft of snow-white raised scales* in the centre of the wing, or the tuft of scales is reddish brown,

or the inner margin ochreous ;—or, the f.-w. are grey, with a bright orange streak along the centre of the wing from the base to beyond the middle, with the costa dark red-brown, and the inner margin more or less streaked with white ;—or, the



f. w. are pale brownish, with a large grey blotch at the hinder margin, and the inner margin white or yellowish ;—or, the f.-w. reddish grey-brown, with a broad whitish streak from the costa to before the middle, meeting a slender whitish streak from the costa to beyond the middle ;—and every possible combination and modification of all these varieties occur. (Some of the varieties come close to varieties of *Hastiana*, but *Cristana* may always be recognised by the greater size of the tuft of raised scales). VIII—XI.

New Forest, Epping, Hainault, and other woods in the South of England.

P. PERMUTANA. 7'''—8''' . F.-w. whitish ochreous, beyond the middle reddish ochreous ; on the inner margin, near the base, is a triangular dark grey blotch ; c. f. reddish brown, reaching to the inner margin and not confluent with the c. s. ; a reddish brown blotch occupies nearly the whole of the apical portion of the wing. VIII, IX.

New Brighton and Barnes Common. Amongst *Rosa spinosissima*.

P. VARIEGANA. 7'''—8''' . Very variable. F.-w. white, with the apical half dark grey ; sometimes the basal portion is cream-colour, or the apical portion is varied with pale blotches ;—or, f.-w. whitish at the base, marbled with grey, with a triangular dark grey spot near the base ; the apical half brown, with darker markings ;—or, f.-w. ochreous, with a triangular black blotch on the inner margin near the base, and a black blotch of irregular form on the costa near the middle, formed by the first half of the c. f. being confluent with the c. s. ;—or, f.-w.



entirely blackish grey, with blacker markings. VII, VIII,

Larva on rose, bramble, hawthorn, &c. VI.

Very common, and generally distributed.

Genus 4. PARAMESIA.

Imago: palpi longer than the head; fore-wings more than twice as long as wide, with several small tufts of raised scales on the surface; costa abruptly arched at the base, very slightly concave in the middle; tip slightly produced; hind-margin rather truncate or slightly oblique.

In this genus we have only three species, which are not nearly so variable as the species of the preceding genus. *Ferrugana* may generally be recognised by its larger size and straighter hind-margin; and though dark specimens of *Aspersana* have much resemblance to *Caledoniana*, the tip of the fore-wings is more produced in the latter species.

P. ASPERSANA. 5'''—7'''. F.-w. ochreous, with a ferruginous patch on the base of the costa, and a small ferruginous spot on the inner margin near the base; on the costa, beyond the middle, is a large triangular ferruginous patch; sometimes the ground-colour is much darker, and the markings, though then dark brown, are much less perceptible. VII, VIII.

Larva yellowish. On *Spiræa filipendula* and *Poterium sanguisorba*. VI.

Mickleham, New Brighton, the New Forest, and the Pentland Hills.

P. FERRUGANA. 7'''—9'''. F.-w. pale reddish ochreous, *reticulated* and *freckled* with darker, sometimes freckled with black dots, with two dark reddish ochreous spots on the costa, one in the middle, the other towards the apex; between them is a similar spot on the disk; the intensity of these markings varies very much, and sometimes there is a dark spot on the inner margin near the base. VIII—X.

Larva pale green; head and 2nd seg. black or brownish. In puckered birch leaves. VII, VIII.

Common, and generally distributed.

P. CALEDONIANA. 6½'''—7'''. F.-w. reddish brown, with the outer edge of the b. p., the c. f. and some reticulations in the apical half of the wing darker. VII, VIII.

On heaths and moors in the North of England and Scotland : common.

Genus 5. TERAS.

Imago : palpi twice as long as the head ; fore-wings twice as long as broad, with several small tufts of raised scales on the surface ; the costa abruptly arched at the base, and with a deep excavation beyond the middle ; the apex produced ; the hind-margin concave.

This genus contains but one species, which varies not only in colour and marking, but also in the form and depth of the costal excavation.

T. CAUDANA. 8'''—9''' . F.-w. grey, irrorated with darker, with an ochreous cloud above the anal angle ; sometimes the c. f. is tolerably distinct, dark grey ; — or, f.-w. dark reddish ochreous, with the c. f. and c. s. dark reddish grey ; — or, f.-w. pale ochreous, reticulated with dark grey ; the c. f. and c. s. dark grey and confluent. VII—IX.

Larva pale green ; head pale yellow. On willow and osier. Widely distributed, and not uncommon.

Family V. STIGMONOTIDÆ.

Imago : fore-wings of variable length, with the costa regularly arched, never obtusely so towards the base, never folded ; on the middle of the inner margin is frequently a pale blotch.

Larva feeding in rolled leaves, or between united leaves, or under bark, or in the young shoots of trees.

This is a family of considerable extent, but many of the species are small, and bear considerable resemblance to each other, so that they are apt to be overlooked ; yet many of them are highly beautiful, and the lovely little *Stigmonota compositella* is certain to compel our admiration. Several of the species appear early in the season. *Heusimene fimbriana* is

on the wing in March, and it is at the same period of the year that *Asthenia pygmæana* should be sought amongst fir trees. *Semasia Wæberana* may frequently be noticed in fruit gardens as early as the end of April. In the following month many of this family may be obtained in the perfect state, and it is then that *Retinia Turionella* should be looked for. Species of this family continue to abound in June and July, but in August they become much scarcer, and after this month, I believe, none of the family are to be met with in the perfect state,—a singular contrast to the autumnal habits of the preceding family.

This family contains eleven genera:—1. PÆCILOCHROMA. 2. ANISOTÆNIA. 3. ROXANA. 4. SEMASIA. 5. EUCE-
LIS. 6. EPHIPPIPHORA. 7. STIGMONOTA. 8. ASTHE-
NIA. 9. RETINIA. 10. PAMPLUSIA. 11. HEUSIMENE.

Genus 1. PÆCILOCHROMA.

Imago: palpi longer than the head; fore-wings more than twice as long as wide; the costa regularly arched; the apex generally obtuse; the hind-margin rounded.

Some of the species of this genus are very variable, but the following is an attempt at a tabular arrangement of them:—

- A. F.-w. with a white or whitish spot on the inner margin beyond the b. p.
- B. Outer edge of b. p. much angulated. *P. corticana*.
- BB. Outer edge of b. p. scarcely angulated. *P. profundana* and *P. Bouchardana*.
- AA. F.-w. with a dorsal blotch, scarcely paler than the ground-colour.
- C. A curved black dash between the c. f. and the apex of the wing. *P. signatana*.
- CC. No black dash between the c. f. and the apex of the wing.

D. The outer edge of b. p. most distinct towards the costa. *P. Hawkerana*.

DD. The outer edge of b. p. most distinct towards the inner margin. *P. tenerana*.

P. PROFUNDANA. $8\frac{1}{2}'''$ — $9\frac{1}{2}'''$. Very variable. F.-w. greyish ochreous or pale reddish brown, with darker markings; outer edge of b. p. *oblique, with only a slight protuberance along the fold*; beyond it, on the inner margin, is a whitish spot; c. f. broad and rather distinct; an irregular brownish spot lies near the tip. VI—VIII.

Not rare, and widely distributed in the southern and mid-land counties of England.

P. CORTICANA. $6'''$ — $8'''$. Very variable. F.-w. whitish grey, greenish or dark grey, with darker markings; *outer edge of b. p. decidedly angulated*; beyond it is a pale or whitish spot on the inner margin; c. f. broad, but rarely well defined; an indistinct dark spot lies towards the apex; sometimes the pale dorsal spot appears to be continued along the inner margin to the base. VI, VII.



Larva on oak and hawthorn.

Abundant, and generally distributed.

P. BOUCHARDANA. $5'''$ — $5\frac{1}{2}'''$. F.-w. grey or dull brownish, with darker markings; outer edge of b. p. slightly angulated; c. f. broad, rather indistinct towards the costa, darker towards the anal angle, preceded by a triangular whitish blotch on the inner margin; towards the apex is a small brown cloud. VII.

Amongst fir trees in Morayshire: scarce.

P. TENERANA. $6'''$ — $7'''$. F.-w. pale reddish ochreous, with dark grey markings; outer edge of b. p. angulated, *only well-defined on the inner margin, where it is followed by a triangular pale ochreous blotch*; c. f. rather indistinct, but not interrupted. VI, VII.

Widely distributed, and not scarce amongst fir trees.

P. HAWKERANA. 5'''—6½'''. F.-w. ochreous, with dark greyish ochreous markings; *the b. p. does not extend across the wing to the inner margin*; its outer edge is angulated; the c. f. is tolerably distinct, *but interrupted* below the middle; some reddish ochreous clouds lie towards the apex. VII—IX.

Larva greyish ochreous, with a greenish tinge; head pale brown. On the shoots and seeds of sea-spurge.

On the Hampshire coast: not rare.

P. SIGNATANA. 7'''—7½'''. F.-w. pale greyish ochreous, with a slight olive tinge, with darker markings; outer edge of b. p. angulated, most distinct on the inner margin; from the middle of the rather wavy dark c. f. *a curved black streak proceeds towards the apex of the wing.* VII.

Larva on *Prunus padus*?

Sanderstead, Mickleham and Preston.

P. OPPRESSANA. 7'''. F.-w. whitish grey, with brownish markings; b. p. darkest towards its outer edge; c. f. irregular and interrupted below the middle; towards the apex is a brownish spot, streaked with dark brown. VI.

Two specimens were taken in Epping Forest some years ago.

Genus 2. ANISOTENIA.

Imago: palpi longer than the head; fore-wings more than twice as long as wide; costa regularly arched; the apex rather obtuse; hind-margin slightly oblique.

A. ULMANA. *Male.*—6'''. F.-w. brown, marbled with purple and black, with a small white spot on the costa before the middle, and a toadstool-shaped spot on the inner margin in the middle. *Female.*—6½'''. F.-w. brown, marbled with purple and black, with a broad white band before the middle, broadest on the fold, and with two small whitish spots on the costa towards the apex. VI, VII.



Not common, but widely distributed.

Genus 3. ROXANA.

Imago : palpi longer than the head ; fore-wings more than twice as long as wide ; costa slightly arched ; the apex rather obtuse ; the hind-margin slightly rounded.

R. ARCUELLA. $7\frac{1}{2}'''$ — $8\frac{1}{2}'''$. F.-w. dark orange, rather suffused with fuscous, with numerous bluish lines ; first, three short longitudinal lines from the base, then a transverse line before the middle, then a curved transverse line terminating at the anal angle, followed by one or two shorter ones towards the apex ; beyond the middle of the wing is a large pale yellow patch, much suffused with black, and containing several shining blue spots. V—VIII.



Darenth Wood, Greenhithe, Hampstead, New Forest, &c.

Genus 4. SEMASIA.

Imago : palpi as long as the head ; fore-wings twice as long as wide ; apex rather obtuse ; hind-margin rounded.

There are eight British species in this genus, which may be thus tabulated :—

- A. F.-w. with a white or whitish blotch on the inner margin.
- B. The white blotch has its apex turned round towards the hind-margin. *S. Populana*.
- BB. The white blotch has its apex erect. *S. Spiniana*.
- BBB. The whitish blotch is dusted with brownish. *S. obscurana*.
- AA. F.-w. with an obscure streaked blotch in the inner margin. *S. Wæberana*, *S. Janthinana* and *S. rufillana*.
- AAA. F.-w. with a pale fascia in the middle. *S. nanana* and *S. Vacciniana*.

S. POPULANA. $5\frac{1}{2}'''$. F.-w. brown, with some bluish transverse lines posteriorly, and with the costa beyond the middle spotted with yellow ; on the middle of the inner margin

is a distinct white spot, rather triangular, *but with the apex turned round posteriorly*; in it are one or two short black streaks on the inner margin. VII—IX.

Not common : occurring amongst salallows near London.

S. SPINIANA. $5'''$ — $5\frac{1}{2}'''$. F.-w. brown, margined with darker, and with some faint indications of bluish transverse lines ; on the middle of the inner margin is a distinct triangular white spot, *the apex of which points towards the costa* ; in it is sometimes a pale grey streak on the inner margin. VI, VII.

Common in hedges near London.

S. OBSCURANA. $5\frac{1}{2}'''$ — $6'''$. F.-w. rich brown, marbled with darker, posteriorly with some transverse bluish lines ; on the middle of the inner margin is a cream-coloured blotch, of irregular form, irrorated with brownish. VI, VII.

Near London, and Worcestershire : scarce.

S. WÖBERANA. $6\frac{1}{2}'''$ — $7\frac{1}{2}'''$. F.-w. orange, marbled with dark brown or black, with short yellow streaks on the costa ; oc. large, with a pearly border, enclosing three black lines. V—VIII.

Larva pinkish white. Under the bark of apple, plum, cherry, laurel, &c.

Common, and generally distributed.

S. JANTHINANA. $4\frac{1}{2}'''$ — $5'''$. F.-w. pale orange, marbled with purplish brown ; on the inner margin, near the middle, is an obscure pale blotch, enclosing three curved dark streaks ; on the costa, before the apex, is a short whitish streak ; *apex and hind-margin pale orange*. VII, VIII.

Widely distributed, and generally common.

S. RUFILLANA. $4\frac{1}{2}'''$ — $5'''$. F.-w. rich purplish brown, freckled with orange, and with some transverse bluish lines ; *the hind-margin is narrowly ochreous*. (Very like the preceding, but f.-w. narrower and the apex not orange). VII, VIII.

Larva flesh-coloured; head dark. Among the seeds of wild carrot.

Mickleham, Sanderstead, Dover, &c.

S. NANANA. $4\frac{1}{4}'''$ — $4\frac{1}{2}'''$. F.-w. *grey, streaked with brownish*, and with dark brown markings, consisting of the base, the outer edge of b. p., the oblique c. f., and a curved streak before the apical spot. (Varies much in the intensity of the markings). VI.

Abundant in the South of England, amongst spruce firs.

S. VACCINIANA. $4'''$ — $4\frac{1}{4}'''$. F.-w. *pale bluish grey, with dark bluish grey markings*, consisting of the b. p., oblique c. f., and a cloud in the apex of the wing. IV—VI.

Larva on bilberry. VI—VIII.

Devonshire, and North of England. Abundant where it occurs.

Genus 5. EUCELIS.

Imago: palpi twice as long as the head; fore-wings more than twice as long as wide; the costa slightly arched; the apex obtuse; the hind-margin rounded.

E. AURANA. $5'''$. F.-w. brown, with two large orange spots, one on the inner margin before the middle, the other towards the apex. VI, VII.



Near London, Yorkshire, Edinburgh, Renfrew, &c. Common amongst Umbelliferæ; flying in the sunshine.

Genus 6. EPHIPPIPHORA.

Imago: palpi slightly longer than the head; fore-wings more than twice as long as wide; the costa arched, though sometimes only slightly; the apex obtuse; hind-margin rounded.

This genus contains only four British species, which may be readily distinguished:—

A. F.-w. with a whitish blotch on the middle of the inner margin. *E. argyrana*.

AA. F.-w. with an indistinct dull yellow blotch on the middle of the inner margin. *E. nigricostana*.

AAA. F.-w. with a distinct bright yellow blotch on the middle of the inner margin.

B. The costal yellow streaks confluent. *E. Trauniana*.

BB. The costal yellow streaks not confluent. *E. regiana*.

E. TRAUNIANA. $5\frac{1}{2}''$ — $6''$. F.-w. dark brown, with a faint olive tinge, with a large bright yellow but *rather pale* yellow blotch on the middle of the inner margin; on the costa are several pale yellow short streaks (which terminate in transverse bluish lines); some of *those beyond the middle of the costa are confluent*. VI, VII.

Plumstead and Bexley, among maple.

E. REGIANA. $6''$ — $6\frac{1}{4}''$. F.-w. olive-brown, posteriorly dark, with a bright *deep yellow* blotch on the middle of the inner margin, enclosing one or two short grey streaks; on the costa are several short yellow streaks, terminating in bluish transverse lines. VI, VII.

Larva dirty white; head pale brown; 2nd seg. yellowish brown; spots blackish. Under the bark of sycamore. IX, X. Widely distributed and common in the South.

E. ARGYRANA. $4''$ — $6''$. F.-w. whitish, marbled with grey and black, with a large whitish blotch of irregular form, somewhat pentagonal, on the middle of the inner margin, and with some slender transverse silvery lines; h.-w. of the male with a conspicuous pale patch at the base, the margins blackish. IV, V.



Larva in the bark of oaks.

Abundant, and generally distributed.

E. NIGRICOSTANA. $5\frac{1}{2}''$ — $6''$. F.-w. smoky brown, with some indistinct transverse bluish lines; on the middle of the inner margin is a large *ill-defined dull yellow spot*, reaching more than half across the wing. VI, VII.

Not rare in the South of England, amongst *Stachys sylvatica*.

Genus 7. STIGMONOTA.

Imago: palpi slightly longer than the head; fore-wings more than twice as long as wide; costa regularly arched; apex obtuse; hind-margin rather rounded.

In many of the species the hind-wings of the male are whitish or white, but the hind-wings of the female are dark.

We have nine species in this genus, which may be thus tabulated:—

A. F.-w. with an indistinct pale fascia. *S. nitidana* and *S. Weirana*.

AA. F.-w. with numerous transverse black lines. *S. Heegerana*.

AAA. F.-w. with a distinct white or silvery blotch on the inner margin.

B. In the blotch are three curved dark streaks. *S. compositella* and *S. Lepastriana*.

BB. In the blotch is one curved dark streak. *S. internana* and *S. perlepidana*.

BBB. In the blotch are no streaks, but a dark spot. *S. interruptana*.

BBBB. In the blotch are neither streaks nor spots. *S. dorsana*.

S. NITIDANA. 4'''. F.-w. *dark purplish grey*, with a paler angulated fascia beyond the b. p.; on the costa, beyond the middle, are several small *silvery white* streaks. VI.

Near London, and the New Forest: not rare.

S. WEIRANA. 5'''. F.-w. *smoky brown*, with *faint* indications of a paler angulated fascia beyond the b. p.; the costa *faintly* spotted with whitish. VI.

Mickleham and Horndean, amongst beeches.

S. HEEGERANA. 5'''. F.-w. grey, with transverse angulated blackish lines; the b. p. dark grey; the c. f. brownish grey; oc. large, grey, enclosing longitudinal black lines. VII.

Once taken at Whittlesea Mere, by Mr. Bouchard.

S. COMPOSITELLA. 4''' . F.-w. glossy brown ; the costa with eight short oblique white streaks ; on the inner margin is a *large silvery white blotch, enclosing three curved blackish lines* ; above the anal angle is a short violet streak. V—VIII.

Common in clover fields in the south of England.

S. INTERNANA. 4½''' — 5''' . F.-w. shining brown, at the base with a faint olive tinge, with eight short whitish streaks on the costa ; on the inner margin, beyond the middle, is a *slightly curved, rather slender, whitish blotch, enclosing one blackish line* ; above the anal angle is a short violet streak.



V e.

In Epping Forest, amongst furze bushes : common.

S. PERLEPIDANA. 5½''' — 6''' . F.-w. pale olive-brown, inclining to chocolate-brown on the inner margin ; the costa is varied with alternate dark brown and whitish streaks ; on the middle of the inner margin is a *curved whitish spot, enclosing one curved dark grey line* ; beyond it is an *almost triangular dark chocolate-brown blotch* ; oc. edged with silvery, enclosing three or four black dots. V, VI.

Larva on bitter vetch (*Orobus*).

Near London ; in the North of England and Scotland.

S. LEPLASTRIANA. 6''' — 6½''' . F.-w. *pale greyish ochreous*, with numerous angulated, transverse, dark grey lines ; those beyond the middle have more or less a bluish tinge ; on the middle of the inner margin is a *curved whitish blotch, enclosing three curved dark grey lines* ; it is followed by a brownish blotch ; oc. edged with silvery violet, enclosing three or four black dots. VII.

Dover and Deal, amongst wild cabbage.

S. INTERRUPTANA. 6½''' . F.-w. *smoky brown* ; the costa spotted with whitish ; on the middle of the inner margin is a white curved blotch, *and in it, on the margin, is a black spot* ; oc. edged with silvery, enclosing four or five longitudinal black lines. VI.

A specimen was taken in Devonshire some years ago.

S. DORSANA. 7'''—8'''. F.-w. shining *olive-brown*, with ten short, whitish, oblique streaks on the costa; on the middle of the inner margin is a curved whitish blotch; oc. edged with silvery, enclosing four black dots. VI.

In the North of England and in Scotland: not common.

Genus 8. ASTHENIA.

Imago: palpi as long as the head; f.-w. more than twice as long as broad; the costa slightly arched; the apex rather obtuse; the hind-margin rounded, but slightly indented below the tip.

We have five British species in this genus, but they do not appear to admit of a tabular arrangement.

A. CONIFERANA. 5½'''—7'''. F.-w. *black*, with some short silvery white streaks on the costa, the last two of which are the most distinct; on the middle of the inner margin is a slender, curved, whitish blotch, enclosing a blackish line; oc. edged with bluish silvery, enclosing three black longitudinal lines. VI, VII.

Scarce near London; not uncommon near Manchester and in Scotland: amongst Scotch fir trees.

A. COSMOPHORANA. 5'''—6'''. F.-w. *shining, greyish brown*, more greyish at the base, with several silvery white streaks along the costa, the first two of which are produced across the wing, forming a wavy transverse line; oc. edged with bluish silvery, enclosing three or four longitudinal black lines. VII.

Rannoch, in Perthshire: scarce.

A. STROBILELLA. 5'''—6'''. F. w. *shining brown dusted with ochreous*, with eight short white silvery streaks on the costa, many of which are continued, as silvery bluish lines, almost across the wing. V.

Larva pale yellow; head pale brown. Feeds on the seeds of fir cones. X—IV.

West Wickham, Croydon, &c., amongst spruce firs.

A. SPLENDIDULANA. $4\frac{1}{2}'''$ — $5'''$. F.-w. *glossy olive-brown*, with several pale pearly streaks on the costa, and *with an indistinct pale pearly blotch on the middle of the inner margin*; beyond it, rather above the fold, lying in the middle of a silvery streak, is a *black dot*. IV—VI.

Widely distributed, and not scarce.

A. PYGMÆANA. $5\frac{1}{2}'''$ — $6'''$. F.-w. *glossy pale grey*, with reddish brown markings; oc. edged with silvery, enclosing three longitudinal black lines; *h.-w. with the base pearly white*. III e—IV b.

Larva yellowish green; head and 2nd seg. black. In leaves of spruce fir. VII.

Two specimens formerly in Haworth's collection; locality unknown.

Genus 9. RETINIA.

Imago: palpi longer than the head; fore-wings nearly three times as long as wide; the costa slightly arched; apex rather obtuse, but more so in some species than in others; hind-margin entire, rounded.

We have eight species in this genus, which may be thus tabulated:—

A. F.-w. bright reddish orange. *R. Buoliana* and *R. Pinicolana*.

AA. F.-w. grey, clouded with black.

B. With numerous silvery streaks. *R. Resinella*.

BB. With no silvery streaks. *R. occultana*.

AAA. F.-w. reddish grey. *R. Pinivorana*.

AAAA. F.-w. grey, with the tip ochreous. *R. sylvestrana*, *R. duplana* and *R. Turionella*.

R. BUOLIANA. $10'''$ — $11'''$. F.-w. reddish orange, *paler along the inner margin and subcostal nervure*; beyond the middle are several rather indistinct, slender, transverse, silvery lines. VII, VIII.

Larva dirty brown; head and 2nd seg. black. In the shoots of Scotch fir. V.

Common, and generally distributed.

R. PINICOLANA. 9'''—10'''. F.-w. reddish orange; *the b. p. well-defined, edged by a yellow silvery streak*; beyond it are several irregularly transverse but *very distinct yellowish silvery streaks*. VII, VIII.

Larva in shoots of Scotch fir (*Pinus sylvestris*).

Local, but widely distributed.

R. PINIVORANA. 7'''—10'''. F.-w. *reddish grey*, with numerous transverse, irregular, pale grey streaks, those beyond the middle with a faint silvery lustre. VI, VII.

Widely distributed, and not scarce amongst fir trees.

R. RESINELLA. 9'''—11'''. F.-w. dark *blackish grey*, with numerous irregular, transverse, silvery streaks, most distinct towards the hind-margin; the costa beyond the middle spotted with whitish. VI.

Larva feeding within a hollow resinous exudation from the branches of fir trees.

Not scarce in Perthshire.

R. SYLVESTRANA. 5'''—6'''. F.-w. grey, with paler transverse lines, which have more or less of a silvery tinge; the outer edge of the b. p. and c. f. is nearly straight, and is well indicated by these pale lines; in the apical portion of the wing is an ochreous cloud. VI, VII.

Larva dull brown; head black; 2nd seg. brown. In shoots of *Pinus Pinea*.

West Wickham and Bournemouth.

R. DUPLANA. $6\frac{1}{2}$ ''' — 7'''. F.-w. shining grey, with brownish markings; the outer edges of the b. p. and c. f. are nearly straight, and are defined by pale transverse lines; beyond the middle the pale portions of the wings have a silvery gloss; the apical portion of the wing is entirely ochreous; head reddish; *thorax dark brown*. (Closely allied to the preceding, but larger, and the ochreous patch at the apex broader). VI.

Perthshire and Banffshire, amongst fir trees: scarce.

R. TURIONELLA. 9'''—10'''. F.-w. pale grey, freckled with ochreous-brown, *with a large dull ochreous cloud at the*

apex; h.-w. whitish at the base; head and thorax reddish.
V e, VI b.

Larva in shoots of Scotch fir. III, IV.

West Wickham Wood, Black Park, Birch Wood, &c.: scarce.

R. OCCULTANA. $8\frac{1}{2}'''$ — $10\frac{1}{2}'''$. F.-w. *pale grey, with dark grey markings*, and with numerous short, transverse, dark grey streaks; *the outer edge of the b. p. is rather sharply angulated*; the c. f. is obliquely placed, and broadest on the inner margin.
VII.

Widely distributed, and not scarce amongst larches and other fir trees.

Genus 10. PAMPLUSIA.

Imago: palpi longer than the head; fore-wings three times as long as broad; costa scarcely arched; the apex acute; hind-margin oblique.

P. MONTICOLANA. $5\frac{1}{2}'''$ — $6'''$. F.-w. shining, reddish ochreous, with reddish brown markings, neatly edged with silvery yellowish; the outer edge of b. p. is very oblique; the c. f. is broadest on the costa, and scarcely attains the inner margin; the apical portion of the wing is entirely reddish brown, except two silvery whitish spots on the costa. VII, VIII.

Not scarce on moors in the North of England, and in Scotland.

Genus 11. HEUSIMENE.

Imago: palpi as long as the head; fore-wings three times as long as broad; the costa nearly straight; the apex rather acute; hind-margin rounded.

H. FIMBRIANA. $7'''$. F.-w. dull ochreous-grey, clouded with dark brown along the inner margin, and streaked with brown along the costa; on the inner margin, rather beyond the middle, is an indistinct whitish grey blotch, enclosing a curved dark grey line; oc. edged with silvery, rather indistinct; h.-w. whitish at the base, with a dark brown border.
III e, IV.

Generally distributed, but rarely common; frequenting oaks.

Family VI. CARPOCAPSIDÆ.

Imago: fore-wings moderately broad; the costa never abruptly arched at the base; the ocellus generally large and distinct, and frequently edged with scales of metallic lustre.

Larva feeding in fruits or on seeds, or more rarely in the roots and shoots of plants.

This family, in this country at least, is not an extensive one, comprising only nineteen species, divided amongst three genera. As is frequently the case with the perfect insects, when the larvæ are seed-feeders, most of the *Carpocapsidæ* are very retired in their habits, and species which are abundant in the larva state are scarcely to be met with in the perfect state. From May to August the variable *Grapholita Ulicetana* abounds throughout the country amongst furze bushes, and in the months of June and July *G. Hypericana* is common amongst *Hypericum*, and *Carpocapsa Pomonella* occurs freely amongst apple trees. The other species are all more or less local, but *Carpocapsa grossana* is common amongst beech, *Grapholita pupillana* on the coast amongst sea wormwood, and the larvæ of *Carpocapsa splendana* and *funerana* are common in acorns and plums respectively.

This family contains, as already mentioned, but three genera:—1. ENDOPISA. 2. CARPOCAPSA. 3. GRAPHOLITA.

Genus 1. ENDOPISA.

Imago: palpi as long as the head; fore-wings more than twice as long as wide; the costa regularly arched; the apex obtuse; hind-margin suddenly concave below the apex, otherwise rounded.

In this genus we have six species, which so closely resemble each other that the determination of specimens is a matter of considerable difficulty.

E. SATURNANA. $6\frac{1}{2}'''$ — $7\frac{1}{2}'''$. F.-w. shining, olive-grey, irrorated with ochreous scales, with several short faint streaks from the costa, and a row of black dots before the hind-margin. VII, VIII.

In grassy places in the South of England and Scotland.

E. ULICANA. $5''$ — $6\frac{1}{2}'''$. F.-w. brownish, slightly irrorated with ochreous; along the costa are several short pale streaks; before the hind-margin is a row of black dots. VI.

Mickleham, Epping, West Wickham, Guildford, &c.

E. GERMARANA. $5\frac{1}{2}'''$ — $6'''$. F.-w. *dark brownish purple*, with several indistinct short whitish streaks along the costa. VI e, VII b.

Larva pinkish white. In the hips of roses. X.

Widely distributed in the South of England.

E. NIGRICANA. $6\frac{1}{2}'''$ — $7'''$. F.-w. *dark brownish olive*; the costa rather distinctly streaked with pale yellow beyond the middle; oc. indistinct, leaden-grey, enclosing the short black lines. VI.

Larva yellowish white; head pale yellowish brown; 2nd seg. yellowish; spots greenish grey. In pea-pods. VII.

Generally distributed, but not often seen.

E. PROXIMANA. $6'''$. F.-w. *olive-brown*, with some faint short yellowish streaks along the costa beyond the middle; oc. edged with silvery, enclosing three or four short black lines. VI.

Larva yellowish white; head brownish; spots blackish. In pea-pods.

Widely distributed, but seldom seen.

E. PUNCTICOSTANA. $5'''$ — $6'''$. F.-w. shining, blackish purple; *the costa very distinctly marked with short oblique yellow streaks.* VI.

West Wickham, and other localities near London: scarce.

Genus 2. CARPOCAPSA.

Imago: palpi longer than the head; fore-wings more than twice as long as wide; costa slightly arched; apex rather obtuse; hind-margin suddenly concave below the apex, otherwise rounded.

All the known larvæ of this genus feed in the interior of fruits.

We have five species in this genus, which may be thus tabulated:—

A. F.-w. with a distinct pale band in the middle.

B. The band white. *C. Juliana*.

BB. The band whitish. *C. Splendana*.

BBB. The band grey. *C. grossana*.

AA. F.-w. with no pale band.

C. Oc. distinct, edged with reddish. *C. Pomonella*.

CC. Oc. indistinct, edged with pale grey. *C. funebrana*.

C. JULIANA. 8'''—9'''. F.-w. white; the b. p. grey, streaked with black, and united to a costal blotch, which reaches to beyond the middle; towards the hind-margin is a large brown blotch, spotted with ochreous and black, and containing a large blue-edged oc.; the central portion of the wing is a curved white band, more or less clouded with grey towards the costa. VII.

Larva in acorns?

Hyde Park, Suffolk, Ireland.

C. SPLENDANA. 6'''—8'''. F.-w. whitish grey; b. p. grey, its outer edge angulated; the costa is streaked all along with grey; towards the hind-margin is a large blackish brown blotch, enclosing the silvery edged oc., in which are three or four black longitudinal lines. VI, VII.



Larva dirty white or pinkish; head and 2nd seg. pale reddish. In acorns. IX.

Widely distributed in the South of England.

C. GROSSANA. 7'''—8½'''. F.-w. grey; b. p. dark grey, its outer edge distinctly angulated; on the inner margin,

beyond the middle, is a large brownish grey cloud, of irregular form ; it is followed by the large oc., of irregular form, edged with silvery green, and enclosing four or five black longitudinal lines. VI, VII.

Larva pale amber, clouded with orange ; head pale yellowish brown. In beech-nuts. IX.

Not scarce in the South of England.

C. POMONELLA. $8\frac{1}{2}'''$ — $9\frac{1}{2}'''$. F.-w. grey, with numerous darker transverse lines, and with a curved black line before the oc., which is *edged with coppery*. VI, VII.

Larva pinkish ; head pinkish : 2nd seg. pale yellowish brown. VIII, IX. In apples and pears.

Generally distributed, and common.

C. FUNEBRANA. $6'''$ — $6\frac{1}{2}'''$. F.-w. grey, clouded with smoky grey ; at the anal angle is an indistinct oc., edged with shining pale grey, enclosing four black dots. VII.

Larva pale red ; head black ; 2nd seg. yellowish brown. In plums. VIII, IX.

Near London and Cambridge. Scarce in the perfect state. The larva very frequent in plum pies.

Genus 3. GRAPHOLITA.

Imago: palpi longer than the head ; fore-wings more than twice as long as wide, the costa slightly arched ; apex rather produced ; hind-margin very slightly concave below the apex, rounded at the anal angle.

We have eight British species in this genus, which may be thus tabulated :—

A. F.-w. entirely brownish ochreous. *G. Hypericana*.

AA. F.-w. with the tip ochreous. *G. Albersana*.

AAA. F.-w. greyish, with a paler curved central band. *G. Ulicetana*.

AAAA. F.-w. pale ochreous. *G. modestana* and *G. microgrammana*.

AAAAA. F.-w. white. *G. Wimmerana* and *G. pupillana*.

AAAAAA. F.-w. yellow. *G. citrana*.

G. ALBERSANA. $8\frac{1}{4}'''$. F.-w. brown, slightly clouded with ochreous at the base; *the apical portion of the wing is entirely dark ochreous* streaked with leaden blue; in the oc. are two or three black dots. V, VI.



Larva in folded leaves of honeysuckle. VIII.

Widely distributed in the South of England.

G. ULICETANA. $5'''$ — $6\frac{1}{4}'''$. F.-w. grey, with the b. p. and apical portion of the wing darker; oc. edged with leaden grey, enclosing four black dots (in Scotch specimens the ground-colour is paler, and the oc. is preceded by a blackish blotch). V—VIII.

Abundant throughout the country, amongst furze bushes; flying in swarms by day.

G. HYPERICANA. $6\frac{1}{4}'''$ — $7'''$. F.-w. *dull orange* or brownish ochreous, streaked with darker; oc. edged with silvery, enclosing three or four black longitudinal lines. VI, VII.

Larva in the tops of *Hypericum*. V.

Widely distributed, and not scarce.

G. MODESTANA. $6\frac{1}{4}'''$ — $7\frac{1}{4}'''$. F.-w. *whitish ochreous*, with numerous transverse grey lines, by which are formed a grey b. p., a greyish rather indistinct c. f., and a grey cloud towards the apex; oc. edged with silvery, enclosing one or two black dots. VII.

Has occurred at Charlton sand pit.

G. MICROGRAMMANA. $4\frac{1}{4}'''$ — $5'''$. F.-w. *pale greyish ochreous*, with numerous slender transverse brownish streaks, and several short streaks from the costa beyond the middle, rather silvery; oc. edged with silvery, enclosing three or four short black lines. VII.

Deal (and once near London?)

G. WIMMERANA. $8'''$. F.-w. *white*, clouded with pale grey; *the outer edge of the b. p. forms a dark grey spot, on the fold*; c. f. angulated and rather slender; oc. with a silvery gloss, enclosing a few black scales. VII.

Larva in the tops of sea wormwood.

Gravesend and St. Osyth, amongst sea wormwood.

G. PUPILLANA. 8'''—8½'''. F.-w. *white*, clouded with pale grey; *the outer edge of the b. p. forms an oblique brownish grey band*; c. f. dark brown-grey (broader and less angulated than in the preceding species); a brown-grey curved streak proceeds from it towards the apex; oc. white, *enclosing three silvery spots, placed in a line amongst some black and ochreous scales.* VIII.

Larva in the roots of *Artemisia maritima*.

On the South coasts, from Essex to Devonshire.



G. CITRANA. 9'''—9½'''. F.-w. *pale primrose*, with two oblique olive-brown bands; from the 2nd runs an oblique olive-brown streak to the apex; oc. edged with silvery, enclosing two or three short black streaks. VII.

Southend, in Essex; and Lytham, Lancashire: amongst rest harrow.

Family VII. CNEPHASIDÆ.

Imago: fore-wings sometimes rather prolonged; the costa nearly straight or slightly arched; hind-margin never concave; no ocelloid patch. In the typical species of this family the outer edge of the basal patch, the oblique c. f., and the prolonged c. s. form three nearly equidistant fasciæ.

As at present constituted this is but a small family, comprising only thirteen British species, arranged in three genera. Most of the species are very dull and dingy-looking, and are little likely to attract much attention; but, on the other hand, the specimens are excessively numerous, and the commoner species—*Cnephasia subjectana*, *C. Virgaureana* and *C. nubilana*—occur literally by thousands. The northern species, *C. octomaculana* and *C. Penziana*, have long been admired for their beauty, and the recent occurrence of *C. cinctana* near Dover has added a still more striking species, in this

family, to our lists. The larvæ of many species appear perfectly omnivorous, and if we find a new larva on a strange plant the probability is that it should be referred to some common species of the genus *Cnephasia*.

In this family we have three genera :—1. SPHALEROPTERA.
2. CNEPHASIA. 3. ABLABIA. The first and third of these each contain only a single species.

Genus 1. SPHALEROPTERA.

Imago : palpi longer than the head ; fore-wings of the male three times as long as broad, with the costa nearly straight,—in the female more than twice as long as broad, with the costa slightly rounded ; hind-margin rounded in both sexes.

S. ICTERICANA. *Male*. 8''' — 10½'''. F.-w. unicolorous, pale ochreous. *Female*. 9''' — 10'''. F.-w. greyish ochreous, with greyish brown markings, consisting of the outer edge of the b. p., the oblique and rather angulated c. f., and the costal spot which unites with it. VI, VII.

Larva polyphagous. V, VI.

Common in the neighbourhood of London.

Genus 2. CNEPHASIA.

Imago : palpi longer than the head ; fore-wings more than twice as long as broad ; costa slightly arched in the male, more arched in the female ; apex rather pointed ; hind-margin oblique, rounded.

We have eleven species in this genus, which may be roughly tabulated as follows :—

A. The b. p. distinct, of uniform intensity.

B. H.-w. white. *C. cinctana*.

BB. H.-w. greyish. *C. hybridana*.

AA. The b. p. not distinct, but its outer edge forms an abbreviated dark fascia.

C. F.-w. white.

D. H.-w. whitish. *C. Penziana*.

DD. H.-w. grey. *C. octomaculana*.

CC. F.-w. pale grey.

E. Outer edge of b. p. very dark and sharply defined. *C. sinuana*.

EE. Outer edge of b. p. not particularly dark nor sharply defined. *C. subjectana*.

CCC. F.-w. dark grey, irrorated with darker. *C. Virgaureana* and *C. alternella*.

CCCC. F.-w. with no distinct markings.

F. F.-w. elongate. *C. pascuana* and *C. conspersana*.

FF. F.-w. short, blackish. *C. nubilana*.

But some of the species are so variable that their varieties could not be named by means of this table; these, however, must be learnt by practice.

C. CINCTANA. $8''' - 8\frac{1}{2}'''$. F.-w. white, slightly speckled with greyish; the distinct b. p., oblique c. f. and well-defined c. s. golden brown; h.-w. white. VII.

Taken at Alkham, near Dover, in 1857.

C. HYBRIDANA. $5\frac{1}{2}''' - 7'''$. F.-w. whitish grey, freckled with darker; the distinct b. p., the nearly straight but slightly angulated c. f., a small spot on the inner margin at the anal angle, and an elongate spot from the costa before the apex, brownish; h.-w. greyish. VI, VII.

Common and widely distributed in the South of England.

C. SUBJECTANA. $7''' - 8'''$. F.-w. pale grey, darker at the base; the outer edge of the b. p. forms a brownish grey abbreviated fascia, not reaching beyond the fold; the oblique c. f. is brownish grey, and has its inner edge much indented; beyond it is the c. s., of the same colour, which sometimes unites with a spot on the hind-margin. VI, VII.

Larva dull olive-green; head pale brown; 2nd seg. black; spots whitish, with black centres. Sluggish, and when disturbed rolls itself up into a ball; feeding on everything. V, VI.

Abundant everywhere.

C. VIRGAUREANA. 7'''—8''' . F.-w. *dark grey, freckled with blackish*, with an abbreviated blackish fascia, formed by the outer edge of the b. p.; the c. f. is oblique and blackish, and its inner edge indented; c. s. generally produced to near the anal angle. VI, VII.

Larva dull chocolate-brown; head shining brown. Polyphagous. V, VI.

Common throughout the country.

C. ALTERNELLA. 7½''' — 9''' . F.-w. *dark grey, mottled with darker*; the markings much as in the last species (from which it is best distinguished by its larger size). VI, VII.

Widely distributed, but seldom common.

C. PASCUANA. 7'''—8''' . F.-w. *rather elongate*, dull grey, with *indistinct* darker markings, consisting of a b. p., c. f. and c. s. VII.

Round London, Box Hill, Dublin, &c.

C. SINUANA. 8'''—8½''' . F.-w. *pale grey; the outer edge of the b. p. indicated by a curved, blackish, abbreviated fascia*; the oblique c. f. and the c. s. *dark purplish grey*, with some scattered black scales. VI, VII.

Darenth Wood, West Wickham, Blandford, Clevedon, &c.

C. CONSPERSANA. 8''' — 10''' . F.-w. *whitish grey*, sometimes with no markings, sometimes speckled with grey, and with faint indications of darker markings. VI, VII.

Larva polyphagous.

On the coasts of Kent, Essex, and the Isle of Wight.

C. OCTOMACULANA. 9½'''—11''' . F.-w. *white, speckled with grey*, with dark grey-black markings, consisting of an angulated *abbreviated fascia*, formed by the outer edge of the b. p., an oblique c. f. with both edges much indented and sometimes interrupted below the middle, and the c. s. which frequently unites with a paler blotch on the hind-margin (the ground-colour of the f.-w. is sometimes much suffused with grey); h.-w. *grey*. VII—IX.

Larva on thistle, &c.

Widely distributed, and not rare in the North of England and Scotland.

C. PENZIANA. $10\frac{1}{2}'''$ — $1'' 1'''$. F.-w. *white, slightly speckled with dark grey, and with distinct blackish markings*; the outer edge of the b. p. forms an angulated fascia, reaching to the inner margin; the c. f. is oblique and sometimes interrupted; the c. s. frequently unites with a paler blotch; h.-w. *whitish* (a variety occurs in which the f.-w. are much suffused with grey).



VII.

Near Edinburgh, Ardrossan, and North Wales.

C. NUBILANA. $6\frac{1}{2}'''$. F.-w. *smoky-grey, irrorated with blackish*, and with faint indications of darker markings. VI, VII.

Generally abundant amongst hawthorn.

Genus 3. ABLABIA.

Imago: palpi much longer than the head; fore-wings nearly three times as long as broad; costa nearly straight; apex acute; hind margin oblique, slightly concave.

A. PRATANA. $9'''$ — $10'''$. F.-w. *glossy, pale greyish brown*, with no distinct markings, but a few scattered dark brown spots, and frequently with two more conspicuous on the disc, one before, the other rather beyond the middle. VII, VIII.

Dover, Mickleham, Sanderstead, Yorkshire, near Edinburgh, &c.: common.

Family VIII. SERICORIDÆ.

Imago: fore-wings with the costa generally considerably rounded; the anal angle frequently rather produced; the ocellus not represented. In the typical species of this family the central fascia is broad and its inner edge nearly straight.

Larva feeding in united or distorted leaves. (That of *Orthotænia antiquana* feeds in the root of *Stachys*).

This family is not of large extent, though more numerous represented in this country than either of the two preceding families. Though most of the species are of sombre appearance, some are tolerably brilliant, and a few shine with metallic lustre. They are all summer insects, occurring between May and August, and two, *Sericoris Lacunana* and *S. Urticana*, are very abundant and of universal occurrence. Many of the family are still scarce with us, but *Euchromia Arbutella*, *E. striana*, *E. Branderiana*, *Sericoris conchana*, *S. cespitana*, *S. politana*, *S. littoralis* and *S. bifasciana* are all tolerably common in the localities where they occur, and the pretty *Mixodia Schulziana* is no rarity on the moors in the North of England and Scotland, and on the heathy district near Weybridge, in Surrey.

This family comprises four genera, which do not seem to admit of tabulation:—1. EUCHROMIA. 2. ORTHOTENIA. 3. SERICORIS. 4. MIXODIA.

Genus 1. EUCHROMIA.

Imago: palpi much longer than the head; fore-wings twice as long as wide; costa regularly arched; apex rather pointed; hind margin straight or rather oblique.

In this genus we have six species, which may be thus tabulated:—

A. F.-w. reddish.

B. F.-w. dark red, with no c. f. *E. Arbutella*.

BB. F.-w. dull dark red, with an obscure c. f. *E. fulvipunctana*.

BBB. F.-w. rosy, with no markings. *E. purpurana*.

AA. F.-w. not reddish.

C. F.-w. with a distinct b. p. *E. Branderiana*.

CC. F.-w. with no distinct b. p.

D. The c. f. interrupted, not reaching the inner margin.

E. Ericetana.

DD. C. f. entire. *E. striana.*

E. ARBUTELLA. 7'''. F.-w. dark crimson, with numerous transverse silvery-blue lines. Ve, VI.

Larva on Arctostaphylos Uva-ursi. V.

Not scarce on heaths in the North of England and Scotland.

E. FULVIPUNCTANA. $8\frac{1}{2}$ '''— $9\frac{1}{2}$ '''. F.-w. dull dark red, irregularly suffused with violet; the c. f. rather oblique, deep crimson, but not very sharply defined. VI, VII.

Larva dark red; head black. In terminal shoots of *Myrica gale* and *Vaccinium Vitis-Idæa*. IV.

Common on moors in the North of England and Scotland.

E. PURPURANA. 9'''. F.-w. dull rosy, with only very faint indications of greyish ochreous irrorations. VI, VII.

Very widely distributed, but always scarce.

E. ERICETANA. 6'''—9'''. F.-w. dull greyish brown, with very faint indications of a b. p.; from the middle of the costa is a transverse dark brown blotch, *not crossing the fold*, and below it are two indistinct oblique yellowish lines. VII.

Shanklin, in the Isle of Wight, Bristol, &c.

E. STRIANA. 7'''—10'''. F.-w. pale grey-brown, streaked with darker, with very faint indications of a b. p., but *with a distinct dark brown* c. f. and a brownish cloud towards the hind margin. VII, VIII.

Widely distributed, and sometimes abundant in the South of England.

E. BRANDERIANA. 11'''—1'' 1'''. F.-w. dull grey, sometimes *with a greenish tinge*; the b. p. large dark greyish brown; c. f. *rather attenuated* in the middle, dark greyish brown. VI, VII.

Near Colchester, New Forest, Worcestershire, amongst poplars.

Genus 2. ORTHOTENIA.

Imago: palpi twice as long as the head; fore-wings more than twice as long as wide; costa regularly arched; apex obtuse; hind-margin truncate.

O. ANTIQUANA. $9\frac{1}{4}'''$. F.-w. dull grey-brown, clouded with darker towards the costa, and with a large triangular dark brown blotch in the centre of the wing, and a dark cloud running from it to the apex. VI, VII.

Larva whitish; head dark brown. In the roots of *Stachys arvensis*. I, II.

Widely distributed, but nowhere common.

Genus 3. SERICORIS.

Imago: palpi longer than the head; fore-wings twice as long as wide; costa regularly arched; apex acute; hind-margin very slightly concave.

We have twelve species in this genus, but it does not seem possible to tabulate them satisfactorily.

S. CONCHANA. $8'''$ — $8\frac{1}{2}'''$. F.-w. pale silvery grey, with *distinct* dark brown markings, consisting of the b. p., the slightly angulated c. f., four small spots on the costa near the apex, *a triangular blotch* at the angle and an elongate blotch between it and the apex. VII.

Epping, Mickleham, New Forest, Perthshire, &c.: not rare.

S. LACUNANA. $7'''$ — $8'''$. F.-w. *greenish grey*, with more or less of a silvery gloss, streaked with darker, with all the markings dark brownish, but rather undefined; the pale space between the b. p. and c. f. emits a streak into the c. f. almost intersecting it. VII.

Larva dark brown-black; head black; very active, polyphagous. V, VI.

Abundant and generally distributed.

S. URTICANA. 8'''—10'''. F.-w. *pale reddish grey*, with more or less of a silvery gloss, streaked with darker, and with *rich dark brown markings*, consisting of the b. p., the c. f., which increases in breadth towards the inner margin, and four subapical costal spots; towards the hind-margin are some paler brownish clouds. VI, VII.

Larva on nettles and other plants.

Abundant and generally distributed.

S. MICANA. 8'''. F.-w. *pale silvery grey*, with *dark brown markings*; the space between the b. p. and c. f. is very restricted, and in the broad c. f. is a pale silvery spot; the entire apex is sometimes clouded with brownish, and a slender dark band can frequently be traced from the costa to the anal angle. VII, VIII.

Scarce in the eastern counties, but commoner in Scotland.

S. ALTERNELLA. 7'''—8'''. F.-w. *greenish grey*, with *very indistinct darker markings*; on the outer edge of the c. f. is a small round silvery spot (the female is very different, much resembling a small sharply-marked specimen of *S. Lacunana.*) VII.

Black Forest, in Perthshire: scarce.

S. FULIGANA. 5'''. F.-w. whitish, with dark brown markings; the b. p. sharply defined, its hinder edge rounded; c. f. oblique, rather broad, not sharply defined; apical portion of the wing entirely clouded with brown. VII.

Near London, in Norfolk, Folkestone, &c. Amongst flea-bane.

S. CESPITANA. 7'''. F.-w. *pale silvery ochreous*, with *rich dark brown markings*; the b. p. sharply defined; the inner edge of the c. f. slightly indented below the costa, *its outer edge with two deep indentations*; above the anal angle is a dark brown blotch, almost uniting with an apical blotch. VI, VII.

Mickleham, near Edinburgh, &c.

S. POLITANA. 6'''—7'''. F.-w. *pale silvery grey*, with the *markings reddish brown*; the b. p. is much the broadest on the

inner margin; the c. f. expands gradually below the costa; the c. s. is frequently continued across to the anal angle, thus forming a fascia nearly parallel to the c. f. VI, VII.

Larva on Myrica gale.

Widely distributed: on moors and heathy places.

S. LITTORALIS. 7'''—7½'''. F.-w. whitish grey, with a dark greyish brown b. p., a greyish brown c. s., slightly oblique, and a brownish cloud towards the hind-margin. VII, VIII.

Larva on Statice armeria.

Not scarce in salt marshes.

S. EUPHORBIANA. 6'''. F.-w. ochreous, with dark brown markings, sometimes much clouded with brownish; a pale band is sometimes rather distinct beyond the b. p., the outer edge of which is nearly straight, but the apical portion of the wing is almost entirely dark brown; hind-margin and fringes ochreous. V.

Once taken in the West of England.

S. LATIFASCIANA. 5'''—6'''. F.-w. yellow, much streaked with brown and with dark brown markings; the outer edge of the b. p. rounded; outer edge of the c. f. indistinct; a brown streak runs from the hind-margin above the anal angle, but does not reach the costa. VII, VIII.

Widely distributed, but not common: among oaks.

S. BIFASCIANA. 6½'''. F.-w. pale yellowish grey, with a grey b. p., the outer edge of which is straight, and a broad grey nearly straight c. f.; hind-margin clouded with grey. VI, VII.

Darenth Wood, West Wickham, Mickleham, &c.: amongst fir trees.

Genus 4. MIXODIA.

Imago: palpi longer than the head; fore wings twice as long as broad; costa regularly but slightly arched; apex rather acute; hind-margin slightly rounded.

This genus contains only two species, which are readily distinguished by their different size and colour.

M. SCHULZIANA. 10½"—1". F.-w. *bright reddish brown, with numerous irregular wavy transverse silvery lines*; nearly in the middle is a small round silvery spot, round which are some black scales; h.-w. *pale grey.* VI, VII.

On heaths and moors, widely distributed and not scarce.



M. PALUSTRANA. 6"—7". F.-w. *rich brown, with some broad transverse silvery ochreous markings*; the brown markings form, besides the b. p. and c. f., a triangular spot on the inner margin beyond the middle, and a cloud of irregular form towards the apex; near the outer edge of the c. f. is a small round yellowish silvery spot; h. w. *dark grey.* V—VII.

Black Forest in Perthshire, and other Scotch localities, amongst fir trees.

Family IX. LOZOPERIDÆ.

Imago: fore-wings with the costa generally regularly arched; hind-margin rather oblique; the ocellus not represented (except in *Calosetia nigromaculana*); in many of the typical species of this family the ground-colour of the fore-wings is yellow and the central fascia starts from the inner margin, not reaching the costa, and is parallel to the hind-margin.

The larvæ are internal feeders (except *Dapsilia rutilana*), many feeding on seeds.

This is a beautiful and an extensive family, and with the exception of a few eccentric species, a very natural one; from their more slender, longer fore-wings, many of these insects have a more graceful appearance than we find elsewhere amongst the Tortricina; all are summer insects, and are to be found in the perfect state between May and August; the curiously-constructed *Phtheochroa rugosana* flies slowly along hedges towards the end of May, at dusk, and is readily

perceptible, from its large size and white appearance on the wing; the obscure-looking *Eriopsela fractifasciana* and the gaily-marked *Chrosis tessera* are common on the short turf of the chalk hills of the South; *Eupæcilia angustana* is generally plentiful in heathy places and in woods, in June and July, and *Xanthosetia hamana* may be noticed flying in July and August amongst thistles. Many of the other species of this family, though not rare, are extremely local, and the collector should be cautious not to neglect any species because it appears abundant.

The genera comprised in this family are eleven in number: they do not appear to admit of tabulation.—1. LOBESIA. 2. PHTHEOCHROA. 3. ERIOPSELA. 4. CHROSIS. 5. ARGYROLEPIA. 6. CALOSETIA. 7. EUPECILIA. 8. LOZOPERA. 9. XANTHOSETIA. 10. DAPSILIA. 11. ARGYRIDIA.

Genus 1. LOBESIA.

Imago: palpi longer than the head; fore-wings more than twice as long as wide; costa slightly arched; apex acute; hind-margin very oblique; in the female the hind-margin of the hind-wings is indented below the tip.

L. RELIQUANA. 5". F.-w. yellow, with brownish orange and black markings, a triangular black spot at the anal angle being the most conspicuous; hind-wings of the male whitish, the tip grey, of the female entirely greyish brown. V.

Widely distributed, and not scarce in the South; flying in the sunshine.

Genus 2. PHTHEOCHROA.

Imago: palpi much longer than the head; fore-wings more than twice as long as wide; costa slightly arched at the base, otherwise nearly straight; apex obtuse; hind-margin rounded;

on the surface of the wings are several tufts of raised scales ; hind-margin of hind-wings slightly indented below the tip.

P. RUGOSANA. 8'''—10'''. F.-w. whitish grey, with some rather irregular darker markings, consisting of a costal patch at the base, two costal spots towards the middle, and a slender fascia towards the apex ; from the costa are three short oblique blotches, snowy white, or, when alive, of a delicate flesh-coloured tint ; h.-w. pale grey, reticulated with darker. V e, VI b.

Larva on Bryonia dioica. IX.

In hedges amongst bryony ; not scarce in the South of England.

Genus 3. ERIOPSELA.

Imago : palpi longer than the head ; fore-wings more than twice as long as wide ; the costa nearly straight ; apex acute ; hind-margin slightly indented before the tip.

In this genus we have two species, which *are very closely related*. They are distinguished with greatest certainty by observing the under side of the hind-wings ; in *E. fractifasciana* these are entirely grey ; in *E. quadrana* they are whitish, speckled with grey at the edges.

E. FRACTIFASCIANA. 5'''—6½'''. F.-w. dull grey, with the b. p. and oblique c. f. darker, and some indistinct dark clouds towards the apex ; the female is smaller than the male, and has the markings more distinct. V, VIII.

Box Hill, Sanderstead, Bristol, &c.

E. QUADRANA. 6'''—7½'''. F.-w. grey, with indistinct but slightly darker markings ; *the outer edge of the b. p. forms a distinct brown-grey spot on the inner margin ; the lower half of the c. f. likewise forms a distinct spot on the inner margin.* V.

West Wickham, Stoa's Nest, &c. : scarce.

Genus 4. CHROSIS.

Imago: palpi longer than the head; fore-wings more than twice as long as wide; costa slightly arched; apex obtuse; hind-margin much rounded.

C. TESSERANA. 4'''—6''' . F.-w. reddish, with four large triangular pale yellow blotches, two on the inner margin and two on the costa; sometimes they are distinctly edged with bluish silvery (varies considerably in colour). VI—VIII.

On the chalk downs at Brighton, Dover, Mickleham, &c.

C. AUDOUINANA. 6'''—6½''' . F.-w. brownish black, the tip ochreous; on the costa near the inner margin are some small ochreous spots, and there are two or three indistinct silvery blue lines. VI, VII.

Darenth Wood, Black Park, &c.: amongst oaks.

Genus 5. ARGYROLEPIA.

Imago: palpi much longer than the head; fore-wings more than twice as long as wide; costa slightly arched or nearly straight; apex obtuse; hind-margin rounded.

We have nine species in this genus, which may be tabulated as follows:—

A. F.-w. bright yellow.

B. With two distinct black fasciæ. *A. æneana*.

BB. The two black fasciæ are united along the inner margin. *A. Schrebersiana*.

AA. F.-w. ochreous or primrose-colour.

C. The angulated c. f. is uninterrupted. *A. Mussehliana*.

CC. The angulated c. f. is interrupted.

D. The c. f. reddish brown. *A. Baumanniana* and *A. Subbaumanniana*.

DD. The c. f. dark brown. *A. badiana* and *A. Cvicana*.

AAA. F.-w. greyish ochreous, freckled with darker. *A. Dubrisana* and *A. maritimana*.

A. *ÆNEANA*. 6'''—8''' . F.-w. bright orange, with a broad interrupted black c. f. and a black fascia on the hind-margin ; both are beautifully speckled with steel-blue. VI.

In profusion at Willesden in 1847 : amongst ragwort.

A. *SCHREBERSIANA*. 5'''—7''' . F.-w. deep yellow at the base, but from before the middle black, except a quadrate ochreous patch on the costa beyond the middle. VI.

Yaxley, Hunts, and in the Cambridgeshire fens.

A. *MUSSEHLIANA*. 5'''—6½''' . F.-w. shining straw-colour ; the costa clouded at the base with brownish ochreous ; beyond the middle the costa and inner margin are spotted with brown ; c. f. broad, dull ochreous, rather indistinct towards the costa.

Taken many years ago in Devonshire.

A. *BAUMANNIANA*. 11'''—11½''' . F.-w. pale ochreous, with reddish brown markings, edged more or less with silvery ; the base is clouded with reddish brown ; not far from the base begins a well-defined oblique reddish brown streak ; above it on the costa is a quadrate blotch of the same colour, and an irregular reddish brown blotch lies on the costa towards the apex ; towards the hind-margin are several paler reddish brown clouds. V, VI.



Scarce, but widely distributed, occurring amongst rushes and in damp places.

A. *SUBBAUMANNIANA*. 7'''—7½''' . Extremely like the preceding, but smaller and paler ; the oblique streak on the inner margin before the middle is less obliquely placed, and at its origin further from the base of the wing. VI, VII.

Darenth Wood, Sanderstead, Mickleham, Brighton, &c.

A. BADIANA. 8'''—10'''. F.-w. pale primrose, clouded with ochreous and with some chocolate-brown blotches, of which one on the inner margin before the middle is very conspicuous; it reaches more than half across the wing, is obliquely placed and *much expanded on the inner margin*; a minute blotch lies at the anal angle, and on the costa are two small paler blotches;



h.-w. greyish brown. VII.

Larva in the stems and roots of burdock.

Widely distributed, and common amongst burdock.

A. CNICANA. $6\frac{1}{2}$ '''—7'''. F.-w. whitish primrose, clouded with pale ochreous, and with some brownish blotches, one on the inner margin before the middle almost uniting with one opposite to it on the costa, another on the costa towards the apex (the dorsal streak is *more slender* than in the preceding, and is *not expanded* on the inner margin); h.-w. grey. VII, VIII.

Epping; amongst thistles.

A. DUBRISANA. 5'''—8'''. F.-w. pale yellowish, *freckled with olive-grey*, with several slender transverse rather silvery streaks, and with a blackish spot on the inner margin towards the anal angle; h.-w. of the male *white*, with the tip grey; of the female entirely grey. VII, VIII.

Dover, Deal, Margate, Croydon, Worcestershire, &c.

A. MARITIMANA. 8'''—8 $\frac{1}{2}$ '''. F.-w. *yellowish straw-colour*, marbled with brownish; before the middle is an indistinct dark fascia and a rather triangular dark spot at the anal angle; two dark spots on the costa before the apex; h.-w. *greyish, freckled with white*. V e, VI b.

Larva yellowish white, with black spots. In the stems and roots of *Eryngium maritimum*. VIII—X.

On the coast near Deal.

Genus 6. CALOSETIA.

Imago: palpi longer than the head; fore-wings twice as long as wide; costa regularly arched; apex acute; hind-margin slightly concave; ocellus large and distinct.

C. NIGROMACULANA. $6\frac{1}{2}'''$ — $8'''$. F.-w. white, with blackish markings; the outer edge of the b. p. and the c. f. form two small costal spots and two large dorsal spots; the oc. large bluish grey, with a black streak above it; tip of the wing ferruginous. VII.

Widely distributed, and not scarce sometimes; amongst ragwort.

Genus 7. EUPECILIA.

Imago: palpi slightly longer than the head; fore-wings elongate, generally more than twice as long as wide; costa nearly straight or very slightly arched; apex obtuse; hind-margin oblique or slightly rounded.

This genus is rather extensive, containing no less than nineteen British species, but unfortunately it does not seem practicable to arrange them satisfactorily in a tabular form.

E. MACULOSANA. $6'''$. F.-w. white, *speckled and clouded with grey*, and with a large blackish blotch on the middle of the inner margin almost reaching to the costa; hind-margin clouded with ferruginous; h.-w. of the male white, greyish along the costa, of the female entirely smoky grey; *head and thorax black*. V, VI.

Widely distributed and not uncommon.

E. ATRICAPITANA. $7'''$ — $7\frac{1}{2}'''$. F.-w. *whitish flesh-colour*, clouded with grey at the base, and with an irregular grey blotch on the middle of the inner-margin and a small grey spot on the middle of the costa; hind-margin dark grey; h.-w. *pale grey, mottled with darker*; *head and thorax black*. VII, VIII.

Charlton, North Wales, and near Dublin: scarce.

E. DUBITANA. $6\frac{1}{2}'''$ — $7'''$. F.-w. white, with a grey blotch at the base; a dark grey blotch on the middle of the inner margin not crossing the fold, and a small dark grey spot on the middle of the costa; hind-margin clouded with grey; h.-w. *greyish, not mottled; head white; thorax black.* VII, VIII.

Bristol and Farnham.

E. SODALIANA. $6'''$ — $7'''$. F.-w. white, speckled with black, and with a black blotch on the middle of the inner margin, *rather straight* and almost reaching to the costa; beyond it is a small blackish blotch on the costa; hind-margin clouded with grey; *head and thorax white.* VI, VII.

West Wickham, Sanderstead, Ripley, Bristol, &c.: scarce.

E. CARDUANA. $6'''$ — $7'''$. F.-w. white, sometimes with a flesh-coloured tint; a grey blotch along the costa at the base; a dark grey blotch on the middle of the inner margin reaching more than half across the wing, *slightly oblique and clouded with rosy*; a small grey spot on the costa beyond it; hind-margin clouded with rosy and dark grey; *head and thorax white.* VII.



Headly Lane, common; near Bristol, &c.

E. NANA. $4\frac{1}{2}'''$ — $6'''$. F.-w. whitish ochreous, clouded with grey at the base; a broad grey fascia in the middle, broadest on the inner margin; hind-margin clouded with dark grey; *head pale ochreous; thorax black.* VI, VII.

Widely distributed and not scarce.

E. AMBIGUELLA. $7'''$. F.-w. ochreous, with a greyish streak along the costa to the middle, where it meets a broad, slightly oblique dark grey fascia; hind-margin speckled with dark grey; *head and thorax ochreous.* VII.

Larva in the flower-buds of the vine. V.

Has occurred in Sussex, amongst birch.

E. CURVISTRIGANA. $6'''$ — $6\frac{1}{2}'''$. F.-w. pale yellow, clouded with ochreous, with a grey streak along the costa to the base; a rather irregular, but tolerably-defined grey fascia in the

middle; a curved grey streak from the costa before the apex to the anal angle; hind-margin clouded with greyish; head and thorax ochreous. V, VI.

Lewes and Bristol.

E. ANGUSTANA. 5'''—7''' . F.-w. pale yellowish, clouded with ochreous; the costa at the base clouded with grey; in the middle is an irregular ill-defined dark grey fascia; hind-margin clouded with greyish; head and thorax ochreous. VI, VII.

Generally abundant in heathy places.

E. NOTULANA. 5'''—5½''' . F.-w. whitish, with a dark grey blotch on the costa near the base; an angulated dark grey fascia in the middle, and a dark grey fascia-form mark from the costa before the apex to the anal angle; the apical half of the wing is much reticulated with grey. VI, VII.

In marshy places; in Devonshire, Gloucestershire, Isle of Wight, &c.: not rare.

E. GRISEANA. 5'''—6½''' . F.-w. reddish grey, clouded with brownish at the base; in the middle is a broad angulated brownish fascia; a brownish streak rises on the costa near the apex, running towards the anal angle. VII, VIII.

Darenth Wood, St. Osyth, &c.: amongst *Inula dysenterica*.

E. RUPICOLA. 5½'''—6''' . F.-w. pale ochreous, clouded with dark ochreous, with an angulated slightly oblique brown central fascia; sometimes a brownish streak along the costa at the base, and sometimes a brownish cloud towards the apex. VII.

Dover, Brislington, the Cambridgeshire Fens: scarce.

E. VECTISANA. 4½''' . F.-w. pale grey, clouded with brownish, with a broad, curved, brownish fascia in the middle, and a curved brownish streak from the costa before the apex to the anal angle. VIII.

Near Ryde, in the Isle of Wight.

E. AFFINITANA. 5½'''—6''' . F.-w. whitish grey, clouded with ochreous on the costa, and with a rather indistinct reddish

brown fascia in the middle; apical portion of the wing speckled with brownish. VII.

In salt marshes; St. Osyth and Gravesend.

E. FLAVICILIANA. 6'''. F.-w. yellowish white, with the costa broadly rosy, and the apical portion entirely rosy; on the inner margin before the middle is an oblique brownish blotch; *fringe yellow.* VII.

Has occurred near Sanderstead; scarce.

E. ROSEANA. 4''' — 6'''. Very like the preceding, but *fringes of the f.-w. reddish.* VII.

Larva green; head and 2nd seg. black. In the seeds of teasle. X—IV.

Widely distributed and not scarce amongst teasles.

E. SUBROSEANA. 6'''—6½'''. F.-w. pale grey, with a *slight* rosy tinge; on the inner margin, before the middle, commences a reddish brown oblique fascia, which reaches almost to the costa; *fringes reddish grey.* VII.

Ambleside and near Airthrey: in heathy places.

E. ANTHEMIDANA. 4'''—5'''. F.-w. whitish, with a pale reddish tint; a greyish blotch on the costa at the base; on the inner margin before the middle commences an oblique reddish brown fascia, almost reaching to the costa; towards the hind-margin are one or two reddish brown clouds. VII, VIII.

Larva in the heads of *Anthemis cotula.*

Charlton sand-pit.

E. RUFICILIANA. 5'''—6'''. F.-w. grey, with a reddish brown blotch along the costa at the base; a reddish brown slightly oblique fascia in the middle; *hind-margin dull reddish. fringes brighter.* VII.

Larva yellowish white; head black; 2nd seg. dark grey; spots pale grey. In seeds of cowslip. VI.

Mickleham, Lewes, &c.

Genus 8. LOZOPERA.

Imago : palpi longer than the head ; fore-wings elongate, sometimes more than three times as long as wide ; costa straight or very slightly arched ; apex acute ; hind-margin oblique.

In this genus we have five species, which may be thus tabulated ; the ground-colour in the fore-wings is always yellow :—

A. F.-w. with indistinct transverse darker markings. *L. straminea* and *L. alternana*.

AA. F.-w. with distinct transverse darker markings.

B. With two distinct entire brown fasciæ. *L. Francillana*.

BB. The second fascia entire ; the first abbreviated. *L. dilucidana*.

BBB. Both fasciæ interrupted. *L. Smeathmanniana*.

L. DILUCIDANA. $6\frac{1}{2}'''$ — $7'''$. F.-w. pale straw-colour, with a slender brown line along the costa from the base to the middle ; an oblique yellowish brown streak from the inner margin, near the base, reaches *half across* the wing ; near the hind-margin is an entire, slender, yellowish brown fascia. VII.

Larva in the stems of parsnip (*Pastinaca sativa*).

Charlton, Plumstead, Sanderstead, Reigate, Isle of Wight, &c.

L. FRANCILLANA. $7'''$ — $9'''$. F.-w. pale straw-colour ; costa narrowly brownish to the middle ; a slightly oblique, slender, yellowish brown, *entire* fascia before the middle, and a similar but more oblique fascia beyond the middle. VII, VIII.

Darenth Wood, Dover, Charlton, Sanderstead, &c.



L. SMEATHMANNIANA. $6\frac{1}{2}'''$ — $8\frac{1}{2}'''$. F.-w. pale primrose ; on the inner margin are two oblique yellowish brown streaks, *reaching half across the wing* (the second is generally interrupted) ; opposite to these, on the costa, are two small yellowish brown spots. VI, VII.

Larva in the flowers of *Anthemis cotula*.

Not very scarce in the neighbourhood of London.

L. STRAMINEA. $7\frac{1}{2}'''$ — $9'''$. F.-w. pale primrose, *mottled with ochreous*, with an oblique brownish streak from the inner margin before the middle; the costa and inner margin are faintly speckled with brownish. V, VI.

Widely distributed, but rather local.

L. ALTERNANA. $10\frac{1}{2}'''$ — $1'' 1'''$. F.-w. primrose-colour, *mottled with brownish*, with a brown streak from the inner margin before the middle, reaching more than half across the wing (less obliquely placed than in the preceding species) and *an indistinct curved brownish streak from the anal angle to the costa before the apex*. VI, VII.

Dover, Deal, Folkestone.

Genus 9. XANTHOSETIA.

Imago: palpi twice as long as the head; fore-wings more than twice as long as wide; the costa regularly arched; apex acute; hind-margin oblique, sometimes slightly concave.

X. HAMANA. $9'''$ — $11'''$. F.-w. lemon-colour, with an oblique ferruginous streak from the anal angle to near the centre of the wing, and frequently with a few other short ferruginous streaks: *hind-margin lemon-colour*, rarely with a faint ferruginous tint. VI—VIII.

Widely distributed, occurring amongst thistles.

X. ZÆGANA. 8—9. F.-w. yellow; the costa at the base tinged with ferruginous; a small irregular ferruginous spot lies below the fold before the middle; *the apical portion of the wing is dark ferruginous*, enclosing a yellow spot. V—VIII.



Larva in the roots of *Scabiosa columbaria*.

Not so common as the preceding, but widely distributed.

Genus 10. DAPSILIA.

Imago: palpi as long as the head; fore-wings more than twice as long as wide; costa slightly arched; apex somewhat obtuse; hind-margin rather rounded.

D. RUTILANA. 5''' . F.-w. deep yellow, with four nearly equidistant blood-red fasciæ; the first at the base and the fourth on the hind-margin; the third is forked on the inner margin and expanded on the costa (showing a tendency to form the letter K).
VII, VIII.



Larva yellowish green; head reddish yellow.
In a web spun amongst the twigs of juniper. VI.

On the chalk downs south of Croydon: not scarce.

Genus 11. ARGYRIDIA.

Imago: palpi longer than the head; fore-wings nearly three times as long as wide; costa almost straight; the apex rather acute; hind-margin oblique.

A. DIPOLTELLA. 6'''—7½''' . F.-w. pearly silvery, with four oblique orange streaks nearly parallel to the hind-margin; the second is furcate on the costa, and the third is so on the inner margin. VII, VIII.

Charlton, Croydon, Guildford, &c.: scarce.

Family TORTRICODIDÆ.

A single insect is of so singular a structure, that it has been placed both amongst the TORTRICINA and the TINEINA, and is now rejected from both groups; we have therefore been under the necessity of erecting a family for this species and placing it between the end of the TORTRICINA and the

commencement of the *TINEINA*. The insect can be well studied by every tyro, as it is abundant at the end of March, just when a fine sunny day coming at the commencement of spring tends so much to the enjoyment of a country ramble.

Genus 1. *TORTRICODES*.

Imago: palpi rather shorter than the head; terminal joint slender; fore-wings more than twice as long as wide; the costa arched at the base in the female, but in the male nearly straight or slightly concave in the middle; apex rather acute; hind-margin slightly rounded; the wings are rather sparingly clothed with scales, and have therefore a semi-transparent appearance.

T. HYEMANA. $9\frac{1}{2}'''$ — $10\frac{1}{2}'''$. F.-w. pale greyish brown, with an ill-defined darker basal blotch and a broad dark brown central fascia, generally very ill defined posteriorly; towards the apex is sometimes a brown cloud, and beyond the central fascia the veins are generally a dark brown. III, IV.

Generally distributed, and abundant in oak woods.

TINEINA.

This group is far more extensive than those we have previously considered, being more than twice as numerous as the *TORTRICINA* and more than outnumbering any two of the preceding groups; the species known to us as inhabiting Great Britain are about 650 in number. But many of these insects are of small size, and consequently they do not occupy a space in our cabinets proportioned to their numbers. As might be anticipated in so extensive a group, there is very

great variety in the insects comprised in it,—but the elongated wings, the slender body and the long or very long fringes to the wings, are characters by which the *TINEINA* may generally be recognised at once; and the development of the palpi and their variety in form and structure, offer most tangible grounds for separating the greater number of the genera. Indeed, if the student will look at the head of a species to see whether it is hairy or smooth, if he will then notice the palpi, whether the maxillary palpi are developed and to what extent, and whether the labial palpi are slender, ascending or drooping, whether the second joint is densely clothed with scales or bears a long protruding tuft, and if he will further notice the form of the hind-wings, which are either well rounded, or very pointed, or indented towards the tip, he will be perfectly surprised to see how easily he will arrange these insects into genera by their structure.

The larvæ vary excessively in the number of legs; sixteen is the usual number, but in several genera (*Gracilaria*, *Lithocolletis*, &c.) we only find fourteen; in *Nepticula*, though the legs are but poorly developed, they number eighteen: on the other hand the larvæ of a few of the smaller genera (*Antispila*, *Tinagma*, &c.) are absolutely apodal; the habits of the larvæ vary excessively, some feed externally, others in rolled-up leaves, others are miners, some case-bearers, some feed on clothes, or in the linings of sofas, &c., &c.; and the difference of habit of the larvæ of species, otherwise most closely allied, affords an endless field of amusement to the observer who devotes himself to the study of 'The Natural History of the Tineina.'

The following is an attempt at a tabular arrangement of the fifteen families in this group :—

- A. Wings of the female (generally) much less developed than in the male, short and pointed. Hind wings of the male broad, not emarginated. 1. EXAPATIDÆ.
- AA. Wings of the female wanting. (*Some of the Tineidæ.*)
- AAA. Wings of the female as fully developed as in the male.
- B. Antennæ not porrected in repose.
- C. Antennæ with basal joint not expanded into any eye-cap.
- D. Labial palpi short and thick.
 - E. F.-w. oblong; maxillary palpi generally well developed. 2. TINEIDÆ and 3. MICROPTERYGIDÆ.
 - EE. F.-w. elongate; maxillary palpi never developed.
 - F. H.-w. ovate-lanceolate. (*Some of the Hypnometridæ.*)
 - FF. H.-w. lanceolate. 9. ARGYRESTHIDÆ.
- DD. Labial palpi rather short, terminal joint pointed.
 - G. F.-w. elongate. 4. HYPNOMETRIDÆ.
 - GG. F.-w. oblong. 8. GLYPHIPTERYGIDÆ.
- DDD. Labial palpi long and pointed.
 - H. H.-w. broad, or indented towards the tip; head not broad and blunt. 6. GELECHIDÆ.
 - HH. H.-w. broad; head broad and blunt (labial palpi less developed than in the Gelechidæ). 7. CECOPHORIDÆ.
 - HHH. H.-w. narrow, not indented towards the tip.
 - I. Maxillary palpi developed, filiform; the perfect insect reposes with its head elevated, the body forming an angle (<) with the surface on which it rests. 10. GRACILARIIDÆ.
 - II. Maxillary palpi ill developed, hardly perceptible; the perfect insect reposes flat on the surface on which it rests. 12. ELACHISTIDÆ.

DDDD. Labial palpi short, obtuse and drooping.

H.-w. lanceolate. 13. LITHOCOLLETIDÆ.

CCC. Antennæ with basal joint expanded into an eye-cap.

K. Antennæ more than half the length of the f.-w. 14. LYONETIDÆ.

KK. Antennæ not half the length of the f.-w. 15. NEPTICULIDÆ.

BB. Antennæ porrected in repose.

L. Head rough; f.-w. oblong or elongate, 5. PLUTELLIDÆ.

LL. Head smooth; f.-w. lanceolate. 11. COLEOPHORIDÆ.

Family I. EXAPATIDÆ.

Imago: wings of the ♂ of large size: of the ♀ extremely abbreviated and pointed (in one genus, *Semioscopis*, as large as in the male); antennæ rather thick, pubescent or densely ciliated; labial palpi of variable length; maxillary palpi undeveloped.

Larva with sixteen legs; the third pair club-shaped.

This family is of small extent, comprising but six British species, all of which appear in the winter or early spring months. The two commonest species are *Chimabacche Fagella* and *C. Phryganella*; the former is abundant on the trunks of trees in the month of April; the latter flies commonly in woods in calm weather in November.

Genus 1. EXAPATE.

Imago: head above and in front hairy; antennæ in the ♂ pubescent; labial palpi of the ♂ very short; tongue wanting; fore-wings of the ♀ very narrow and very short; no hind-wings to ♀.

E. GELATELLA. ♂ $9\frac{1}{2}'''$, ♀ $4'''$. F.-w. greyish brown, with a slight purplish gloss, with a broad whitish streak from the base along the disk, in which are two dark brown spots, one before, the other beyond the middle. XI, XII.



Brs. ! M. Y.

Genus 2. DASYSTOMA.

Imago : head smooth in front, above rather hairy ; antennæ in the ♂ densely ciliated ; labial palpi porrected, hairy ; tongue wanting ; fore-wings in the ♀ extremely narrow and very short ; no hind-wings to ♀.

D. SALICELLA. ♂ $8'''$, ♀ $3\frac{1}{2}'''$. F.-w. pale greyish brown, tinged with rosy, with a dark brown transverse cloud nearly in the middle and two dark brown spots on the disk beyond the middle. IV.

Brs. Ca. K. M. Y.

Genus 3. CHIMABACCHE.

Imago : head smooth in front, rather hairy above ; antennæ in the ♂ densely ciliated or pubescent ; labial palpi ascending ; terminal joint smooth and pointed ; tongue short ; fore-wings in ♀ short and pointed ; hind-wings in the ♀ short and narrow.

C. PHRYGANELLA. ♂ $10\frac{1}{2}'''$, ♀ $8'''$. F.-w. rather pale brown, darker towards the costa, and with two obscure oblique brownish blotches, one in the middle, and one beyond the middle (f.-w. of the ♀ whitish grey, with some blackish markings). X, XI.

Larva yellowish green, darker in front ; head brown. VI. On oak, bilberry, &c. ; between united leaves.

Bi. ! Ca. ! Da. ! K. L.D. Lw. ! M. !! Sc. !! Y.

C. FAGELLA. ♂ $1'' 1'''$, ♀ $9'''$. F.-w. whitish or yellowish, dusted with brownish, with an angulated dark brown striga

before the middle, and two small dark brown spots on the disk nearly in the middle, followed by a dark transverse streak. III e, IV.

Larva greyish green; head yellowish grey. On most trees; between united leaves. IX, X.

Bi.!! Brs.!! Ca.! Da.!! K.! L.D. Lw.!! M.!! Ne.!! Pm.!! Sc.!! Tn.!! Y.!!

Genus 4. SEMIOSCOPIS.

Imago: head smooth; antennæ in the ♂ pubescent; tongue short; labial palpi arched; second joint with appressed scales; terminal joint pointed; wings alike in both sexes.

S. AVELLANELLA. 11". F.-w. greyish, with a dark fuscous streak from the base along the fold, angulated towards the costa, and terminating on the disk about the middle; beyond the middle on the disk is a V-like black mark. III e, IV b.

Brs. L.D. Sc. Y.

S. STEINKELLNERIANA. 10". F.-w. greyish brown, tinged with rosy, with an angulated black mark on the disk before the middle; the angle pointing towards the inner margin; beyond it is a brownish blotch on the costa, and a small angulated black mark, with the angle turned towards the apex. IV.

Larva on hawthorn and mountain-ash; between turned-down leaves. VIII, IX.

Bi.! Brs.! Ca. Da. K. L.D. M. Sc.!! Y.

Family II. TINEIDÆ.

Imago: head rough; labial palpi short and thick, often bristly; maxillary palpi generally extremely developed; antennæ variable, sometimes very long.

Larva with sixteen legs, residing in a portable case; or feeding in fungi or decayed wood, &c.

This is a family of considerable extent, comprising nearly seventy British species: many of the species are only too

plentiful, forming complete pests in houses where they obtain a footing, from the mischief which they cause by destroying carpets, sofas, &c. Some of the out-door species are very beautiful, especially the day-flying long-horns (*Adela* and *Nemotois*), resplendent with metallic-green and purple, and delighting to display their brilliancy in the glare of the mid-day sun. The genus of long-horns (*Nemophora*) which fly at dusk are of more sober hues; several of the species of this family are extremely rare with us, but many are excessively abundant. The species of *Solenobia* appear in the perfect state in April, but the greater number of this family occur in the summer months; some are very retired in their habits in the perfect state, and the genus *Ochsenheimeria* should be searched for in July at the roots of grass.

This family comprises eleven genera, which may be thus tabulated:—

- A. Maxillary palpi undeveloped.
 - B. Antennæ of moderate length.
 - C. Head rough.
 - D. Females wingless. 1. TALEPORA and 2. SOLENOBIA.
 - DD. Females winged.
 - E. Labial palpi short, not thickened with scales. 3. DIPLODOMA. 4. XYSMATODOMA.
 - EE. Labial palpi porrected; second joint very hairy, with a projecting tuft. 5. OCHSENHEIMERIA.
 - CC. Head smooth. 9. TEICHOBIA.
 - BB. Antennæ very long.
 - F. Eyes of the ♂ distant. 12. ADELA.
 - FF. Eyes of the ♂ large, approximating. 13. NEMOTOIS.
- AA. Maxillary palpi 5—6 jointed.
 - B. Antennæ of moderate length.

C. Head rough.

G. Terminal joint of labial palpi slender, ascending. 6. EUPLOCAMUS.

GG. Terminal joint of labial palpi thick, not ascending-

H. H.-w. clothed with scales. 7. TINEA.

HH. H.-w. clothed with hairs. 10. INCURVARIA.

CC. Head in front and on the crown smooth. 8. LAMPRONIA.

BB. Antennæ very long. 11. NEMOPHORA.

Genus 1. TALEPORA.

Imago: head hairy; antennæ of the ♂ ciliated; no maxillary palpi; labial palpi cylindrical, hairy; tongue wanting; the ♀ wingless.

Larva case-bearing; the case long and slender. We have only two species which may be readily distinguished:—

A. F.-w. unicolorous. *T. pubicornis*.

AA. F.-w. reticulated. *T. pseudo-bombycella*.

T. PUBICORNIS. $7\frac{1}{2}$ ". F.-w. shining fuscous, immaculate; the costa rather darker towards the base. VI.

Near Grassington, in Yorkshire: scarce.

T. PSEUDO-BOMBYCELLA. 8". F.-w. greyish fuscous, reticulated with pale yellow, and with a darker spot on the disk beyond the middle. VI.

Larva whitish; head and second seg. black. On lichen on palings, &c. X—IV.

Bi.!! Brs. Ca. K. L.D. M.!! Ne. Pm.! Sc.!! Y.

Genus 2. SOLENOBIA.

Differs from the preceding genus in the much shorter labial palpi being almost concealed in the hairs of the mouth, and the case of the larva is short.

It is difficult to determine the number of species which we have in this genus, as from many larvæ we breed only females, and it is hardly possible to distinguish the wingless females of the different species. The unimpregnated females of this genus lay fertile eggs, so that one may breed a species for years without ever seeing a male. Mr. Edleston believes we have a third species occurring near Manchester; the larva under stones on the moors, the perfect insect appearing in May.

S. INCONSPICUELLA. $5\frac{1}{2}''$ — $6''$. F.-w. rather narrow, with the tip rounded, greyish fuscous, with numerous irregular, rather large, but not sharply defined whitish spots; hind-margin dotted with dark grey. IV b.

Larva yellowish grey; head blackish; 2nd seg. black; 3rd and 4th segs. each with two black spots above. Case greyish green, three-sided; on palings and trunks of trees. III.

Bi. Brs.! M.! Ne. Pm. Y.

S. DOUGLASHI. $6''$. F.-w. broader than in the preceding; the tip less rounded; the whitish spots more sharply defined, and the marginal dark spots wanting. IV.

Once taken at Birch Wood; perhaps only a form of the preceding.

Genus 3. DIPLODOMA.

Imago: head hairy; antennæ of the ♂ ciliated; of the ♀ subdentate; no maxillary palpi; labial palpi cylindric, hairy. Female with well-developed wings.

Larva case-bearing; the case enclosed in an outer covering.

D. MARGINIPUNCTELLA. $5\frac{1}{2}''$. F.-w. dark brown, tinged with purplish, with numerous small pale yellow spots, which appear to form two fasciæ; a broad one before the middle and a slender one towards the hind-margin. VI, VII.

Larva dull whitish; head pale brown; 2nd seg. darker brown; 3rd and 4th segs. tinged with brownish at the sides. On fungus? IX, X.

Al. Bi. Da. L.D. M. Pm. Y.

Genus 4. XYSMATODOMA.

Imago: head hairy; antennæ of the ♂ strongly ciliated; no maxillary palpi; labial palpi short, cylindric, hairy; ♀ with the wings narrower than the ♂.

Larva case-bearing; the case simple, rather short.

X. MELANELLA. $5\frac{1}{2}'''$. F.-w. black, with numerous scattered white spots, with an indistinct slender white fascia before the middle, and two opposite whitish spots beyond the middle. VI.

Larva dull yellowish; head black; 2nd seg. black above; 3rd and 4th segs., each with four blackish spots above. On lichen; on the trunks of trees and on palings. IV, V.

Bi. Brs. M.! Y.

Genus 5. OCHSENHEIMERIA.

Imago: head very hairy above, in front smoother; antennæ rather thick, sometimes thickened with scales to the middle; maxillary palpi undeveloped; labial palpi porrected; the 2nd joint very hairy; terminal joint smooth, ascending, pointed; fore-wings oblong, with semi-erect scales.

Larva naked, burrowing in the stems of grass.

In this genus we have only three species, which may be thus readily distinguished by the antennæ:—

A. Antennæ much thickened with scales to the middle.

O. Birdella.

AA. Antennæ very slightly thickened with scales nearly to the middle. *O. Bisontella.*

AAA. Antennæ perfectly simple. *O. Vacculella.*

O. BIRDELLA. $5\frac{1}{2}'''$ — $6\frac{1}{2}'''$. F.-w. greyish brown or dull ochreous, with numerous scattered dark brown and whitish elevated scales; h.-w. purplish fuscous, the extreme base almost transparent. VII.

Larva shining, whitish yellow; spiracles blackish. In grass stems. II—V.

Bi.!! Brs. Ca. K.! L.D. M. Ne.!! Sc.! Y. In pasture fields.

O. BISONTELLA. $4\frac{1}{2}''$ — $5''$. F.-w. greyish brown or ochreous-brown; h.-w. pale grey, tinged with purple; at the extreme base transparent. VII.

Brs. Ca. K. M. Ne. In heathy places.

O. VACCULELLA. $5\frac{1}{2}''$. F.-w. greyish brown or dingy ochreous suffused with brownish; beyond the middle is a faint appearance of an indistinct dark fascia; h.-w. pale grey, tinged with purple, *nearly the whole of the basal-half transparent*. VII.

Da. M. Frequents houses.

Genus 6. EUPLOCAMUS.

Imago: head hairy; antennæ of the ♂ with tufts of fine hairs; maxillary palpi folded, six-jointed; labial palpi with the 2nd joint with a tuft of hair beneath; terminal joint slender, erect.

E. BOLETTI. $1''$. F.-w. pale ochreous, clouded with fuscous and spotted with dark fuscous; along the costa are three fuscous blotches; the third almost uniting with a blotch on the inner margin; fringe dark fuscous, with four pale ochreous patches. VII.

Larva in Fungi.

New Forest and Epping Forest: scarce.

Genus 7. TINEA.

Imago: head hairy; antennæ variable in thickness and in length; in the ♂ slightly ciliated; maxillary palpi folded, five-jointed (except in *biselliella*, *nigripunctella* and a few other species); labial palpi cylindric, hairy, sometimes bristly; forewings oblong, ovate; hind-wings ovate, clothed with scales.

We have thirty-two species in this genus, which may be thus tabulated:—

A. F.-w. with a transparent spot on the disk. *T. imella*, *T. ferruginella*, *T. rusticella* and *T. monachella*.

- AA. F.-w. with no transparent spot on the disk.
 B. F.-w. dark, with large whitish marginal spots. *T. fulvimitrella* and *T. Caprimulgella*.
 BB. F.-w. with the basal half black; apical half whitish. *T. tapetzella*.
 BBB. F.-w. whitish, with an angulated black fascia. *T. arcella*.
 BBBB. F.-w. pale, with a dark streak or streaks from the base. *T. picarella* and *T. arcuatella*.
 BBBBB. F.-w. with a mottled appearance. *T. corticella*, *T. parasitella*, *T. Granella*, *T. cloacella*, *T. ruricolella*, *T. Cochylidella*, *T. albipunctella*.
 BBBBBB. F.-w. nearly unicolorous, with a few dark spots on the disk. *T. misella*, *T. fuscipunctella*, *T. pelliconella*, *T. merdella*, *T. pallescentella*, *T. flavescentella* and *T. Lapella*.
 BBBBBBB. F.-w. ochreous.
 C. F.-w. unicolorous. *T. biselliella* and *T. ochraceella*.
 CC. F.-w. with a dark spot at the anal angle. *T. semi-fulvella*.
 CCC. F.-w. with numerous marginal dark spots. *T. nigripunctella*.
 BBBBBBBB. F.-w. violet-brown, unicolorous. *T. simplicella*.
 BBBBBBBBB. F.-w. dark, with pale fasciæ or transverse spots. *T. bistrigella*, *T. subammannella* and *T. argentimaculella*.

T. IMELLA. $6\frac{1}{4}$ ". F.-w. shining fuscous; the extreme costa near the middle from before the tip pale ochreous; a small pale spot near the middle of the disk. VI—VIII.
 Pa. M. Cm.

T. FERRUGINELLA. $5\frac{1}{4}$ ". F.-w. dark fuscous, with a faint purplish tinge; the inner margin nearly to the fold pale ochreous; a small pale spot near the middle of the disk. VI, VII and X.
 Brs.! K. Lw. M. Pm.!!

T. RUSTICELLA. 6'''—8''' . F.-w. dark greyish brown, with a faint purplish tinge, dusted with pale ochreous, and with a pale ochreous spot on the disk before the middle, and a small ochreous spot at the anal angle. V, VI.

Larva whitish; head pale brown; 2nd seg. yellowish brown. On cloth, &c. I, II.

Bi.!! Brs.!! Ca.! Da.! K.! M.! Ne. Pm.!! Sc.!! Tn.!!

T. MONACHELLA. 5½''' . F.-w. dark fuscous, with a large white blotch on the costa from before the middle to the tip, reaching half across the wing. V, VIII.

Ca.

T. FULVIMITRELLA. 8''' . F.-w. dark purplish fuscous, with four conspicuous whitish spots, two of which are on the inner margin and two obliquely beyond them on the costa. VI.



Larva dull yellowish white; head dark brown, blacker above; 2nd. seg. with two brown spots behind. In Fungi and rotten wood. V.

. M.! Rotherham, New Forest, and Rannoch, Perthshire.

T. TAPETZELLA. 9''' . F.-w. black from the base to the middle, then white clouded with grey towards the tip. VI, VII.



Larva on cloth, under a gallery.

Bi.!! Brs.!! Ca.! Da.! K.! Lw.! M.!! Ne.!! Pm.!! Sc.!! Tn.!!

T. ARCELLA. 6½''' . F.-w. white, with a short brown streak on the costa at the base, and in the middle an angulated brown fascia. VI—VIII.

Larva in rotten wood.

Al.! Brs.! Ca. Da. K. M. Pm. Sc.!

T. PICARELLA. 7½''' . F.-w. white, with a black streak from the base to the apex running near the costa and making a curve beyond the middle; towards the inner margin are some small black spots. VII.

Manchester and Newcastle-on-Tyne.

T. ARCUATELLA. $9\frac{1}{2}'''$. F.-w. whitish, clouded with pale fuscous, *with two blackish streaks from the base*, a short one near the costa, and a longer one on the fold; a curved blackish streak starts from near the middle of the costa, and runs towards the tip. VI, VIII.

Larva in Fungi. VII, IX.

Rannoch, in Perthshire.

T. CORTICELLA. $7\frac{1}{2}'''$. F.-w. whitish, suffused with pale fuscous towards the costa; along the costa are several small dark fuscous spots, and *on the middle of the inner margin is a pale fuscous triangular spot standing on its apex*; head white. V, VIII.

Larva in Fungi on hornbeam.

Brs. L.D. M.!! Ne. Pm. Y. Epping Forest.

T. PARASITELLA. $9'''$. F.-w. whitish grey, chequered and spotted with dark fuscous (very similar to the preceding, *but darker*); head ochreous. V, VI.

Larva in Fungi and rotten wood.

Brs. Ne. Pm. Hyde Park.

T. GRANELLA. $4\frac{1}{2}'''$ — $7'''$. F.-w. white, with several blackish spots; one on the costa at the base, *reaching to the fold*; a small one beyond it, on the costa; another on the fold; from the middle of the costa is a larger spot, reaching half across the wing; towards the tip are several smaller spots; head white or whitish. VI.

Larva among corn in granaries. IX, X.

Bi.!! Brs.!! Ca.! Da. K.! L.D. Lw.! M. Ne.!! Pm. Sc.!! Y.!!

T. CLOACELLA. $6\frac{1}{2}'''$. F.-w. whitish, clouded with pale brownish, and mottled with dark brown spots, three of which, on the costa, are very conspicuous, but that at the base *does not reach to the fold*, and the third is connected with a longitudinal streak on the disk; head pale ochreous. V, VIII.

Larva in Fungi and rotten wood.

Bi.!! Brs.!! Ca.! Da.!! K.! L.D. Lw.! M.! Ne. Pm.!! Sc.!! Y.!!

T. RURICOLELLA. $5\frac{1}{4}'''$ — $6\frac{1}{4}'''$. Very closely allied to the preceding, but it is a *neater, smoother-looking* insect, and the third costal spot is *not produced posteriorly on the disk*. V, VIII.

Brs.! Pm. Lewisham !!

T. COCHYLIDELLA. $6'''$. F.-w. greyish ochreous, with a whitish blotch in the middle of the fold, *intersected by a curved dark brown spot arising from the middle of the inner margin*. VI.

Once taken near Sanderstead.

T. ALBIPUNCTELLA. $5'''$. F.-w. shining dark brown, with numerous whitish spots along the costa and inner margin; the disk is dusted with whitish. VI.

Bi. Brs. Lw.

T. CAPRIMULGELLA. $5\frac{1}{4}'''$. F.-w. dark violet-brown, with a rather oblique pale yellowish fascia before the middle, broadest on the inner margin; beyond the middle are two small yellowish spots on the costa, and one on the inner margin. VII.

Larva in rotten wood.

Hackney; Hyde Park.

T. MISELLA. $6'''$ — $7'''$. F.-w. yellowish brown, marbled with pale yellow, with a dark brown spot on the disk beyond the middle, and sometimes another on the fold; h.-w. grey, *with a purple gloss*. VI, VIII.

Bi.!! Y.! Burton-on-Trent.

T. FUSCIPUNCTELLA. $6'''$ — $7\frac{1}{4}'''$. F.-w. pale greyish ochreous, clouded with brownish, with a dark brown blotch on the inner margin near the base; on the disk are three (2, 1) dark brown spots; costal fringes brownish, *chequered with pale ochreous*; h.-w. whitish grey. VI, IX.

Bi.!! Brs.!! Ca.! Da.!! K. L.D. Lw.! M.!! Pm. Sc.!! Y.!!

T. PELLIONELLA. $5\frac{1}{4}'''$ — $6\frac{1}{2}'''$. F.-w. greyish ochreous, with three (2, 1) rather indistinct brownish spots on the disk; costal fringes *unicolorous*; h.-w. whitish grey. II—XI.

Larva dull whitish ; head red-brown ; 2nd seg. with a dark brown plate behind. In a flattish case ; on cloth, feathers, &c., &c.

Brs.!! Ca.! Da.! K.! Lw.! M.!! Ne.! Pm.! Sc.! Y.!
No doubt everywhere.

T. MERDELLA. 5'''—7½'''. F.-w. pale greyish ochreous (more silky than in the preceding), *with a short blackish streak from the base near the costa*, and with three (2, 1) small blackish spots on the disk ; h.-w. whitish grey. VII.

Liverpool. M.

T. PALLESCENTEELLA. 7'''—10'''. F.-w. shining pale greyish ochreous, with a short blackish streak from the base near the costa, and *a more conspicuous blackish streak along the fold, reaching to the middle* ; on the disk beyond the middle are two (1, 1) blackish spots. VIII.

Larva on grain.

Bi.!! Liverpool!! M. Y.

T. FLAVESCENTELLA. 5½'''. F.-w. pale ochreous, dusted with brownish, with three (2, 1) dark brown spots ; extreme base of the costa dark fuscous.

Formerly taken near London ; perhaps an imported species.

T. LAPELLA. 7'''—7½'''. F.-w. pale ochreous ; basal half of the costa dark fuscous ; on the disk are three black spots (2, 1) ; the lower spot of the two first is the largest, — the upper one is very small, and sometimes wanting. V, VIII.



Bi.! Brs.!! Ca.! Da.! K.! L.D. M.
Pm. Sc.!! Y.

T. BISELLIELLA. 6½'''—8'''. F.-w. shining pale ochreous, *immaculate* ; h.-w. *whitish* ; head reddish ochreous. III—X.

Larva dirty whitish.

In linings of chairs, sofas, &c.

Bi.!! Brs.!! Ca.! Da.!! K.! M.!! Ne.!! Sc.!! Y.!

T. SIMPLICELLA. 6'''. F.-w. brownish, with a faint yellowish tinge; *the costa beyond the middle narrowly yellowish*; h.-w. greyish purple. VII.

Dover; Mickleham.

T. NIGRIPUNCTELLA. $4\frac{1}{2}'''$ — $5\frac{1}{2}'''$. F.-w. yellowish, with numerous small blackish spots, of which two opposite spots in the middle are the most conspicuous. VIII.

Larva in a case on old fences (?)

Brs. ! Lw. Y.

T. SEMIFULVELLA. 8'''. F.-w. pale ochreous, suffused with reddish ochreous; basal half of the costa reddish brown; on the inner margin, beyond the middle, is a small dark brown spot; head dark ferruginous. VI.

Larva yellowish white; head pale brown.

Bi. Brs. Ca. Da. K. M. Pm. Sc. ! Y.

T. OCHRACEELLA. 8'''—9'''. F.-w. unicolorous, ochreous; h.-w. rather dark grey. VII.

Abundant at Rannoch, Perthshire, in ants'-nests.

T. BISTRIGELLA. 4'''. F.-w. shining fuscous, with a straight white fascia before the middle, and a rather *curved* one beyond the middle, sometimes followed by a white dot. VI.



Larva dull pale yellow; dorsal vessel darker and greenish; head pale brown. In birch-leaves. Mine at first linear, then a large blotch, in which the larva cuts out an oval case. VII—IX.

Brs. ! L.D. M. Pm. Sc. !! Y. Lynmouth, Devon; and Torwood, Stirlingshire.

T. SUBAMMANELLA. 3'''. Very like the preceding, but f.-w. *purplish* brown, and *both* the fasciæ *straight* and *yellowish* white. VII.

Once taken in Tor Wood, Stirlingshire, in 1858.

T. ARGENTIMACULELLA. 4'''. F.-w. rather shining dark fuscous, with an oblique silvery fascia before the middle; two silvery opposite spots beyond the middle, and several minute silvery white spots towards the tip. VII.

Brs. M.

Genus 8. LAMPRONIA.

Imago : head rough behind ; on the crown and in front the hairs smooth ; antennæ rather thick, not pectinated, shorter than the fore-wings ; maxillary palpi five-jointed, folded ; labial palpi cylindric, hairy ; second joint bristly. Flight diurnal.

Larva case-bearing, or boring in stems of plants.

We have four species in this genus, which may be readily recognised :—

A. F.-w. with very indistinct pale spots. *L. quadripunctella*.

AA. F.-w. with numerous small distinct pale spots. *L. Rubiella*.

AAA. F.-w. with a pale fascia before the middle, and pale opposite spots beyond the middle.

B. The costal spot is rather anterior to the dorsal spot. *L. Luzella*.

BB. The costal spot is decidedly posterior to the dorsal spot. *L. praelatella*.

L. QUADRIPUNCTELLA. 6''''. F.-w. dull brown, with a pale yellowish rather triangular spot on the inner margin beyond the middle ; above it is a small pale spot on the disk, and sometimes an indistinct spot on the costa rather beyond. VI.

Larva dull reddish brown ; head blackish. In shoots of roses. V.

Al. Bi. !! Brs. !! Ca. Da. !! K. M. !! Pm. ! Y.

L. LUZELLA. 5½''''. F.-w. dark purplish brown, with a pale yellow rather oblique fascia before the middle, broadest on the inner margin ; beyond the middle are two pale yellow marginal spots, that on the inner margin much the larger. VI.

Brs. C.E.D. L.D. M. ! Pm. Tn. ! Y. West Wickham, Teignmouth and Chesterfield !

L. PRELATELLA. 6''''. F.-w. dark brown, with a small whitish spot in the middle of the base, a nearly straight whitish fascia before the middle, and two whitish marginal spots beyond the middle, of nearly equal size. VI.



Larva whitish; head brown; 2nd seg. with a blackish plate in front. In a flat case on the under side of wild strawberry leaves. IX—V.

Brs. Da.!! L.D. M. Ne.! Pm. Sc.!! Y.

L. RUBIELLA. 5''''. F.-w. shining brown, with numerous yellow dots, two conspicuous yellow spots on the inner margin, and four smaller spots on the costa. VI.

Larva red; head black; 2nd seg. dark grey above. In shoots of raspberry. IV, V.

Al. Brs.!! Ca.! Da.!! K. L.D. M.!! Ne.! Pm.! Sc.!! Y.!

Genus 9. TEICHOBIA.

Imago: head smooth above and in front, with hairs arising above the eyes, reaching nearly to the crown; maxillary palpi short; labial palpi slender; antennæ shorter than the forewings.

T. VERHUELLELLA. 4½''''. F.-w. blackish, with a violet gloss; h.-w. violet-grey. VI.

Larva whitish ochreous; dorsal vessel brownish; head black; 2nd seg. with a black plate above. Burrows under the fructification of *Asplenium Ruta-muraria* and *Scolopendrium vulgare*. XI—III.

Brs. L.D. Y. Bideford, Devon; N. Wales; Whitby and Richmond, Yorkshire.

Genus 10. INCURVARIA.

Imago: head hairy above and in front (palpi as in *Lampronia*); antennæ shorter than the forewings, sometimes pectinated; hind-wings generally with hair-scales.

Larva mining in leaves, and making a flat case, or boring in the stems of plants.

We have five species in this genus, which are not very difficult to distinguish; yet it is not very easy to tabulate them.

I. MUSCALELLA. 6''' . F.-w. glossy *dark brown*, with two pale yellowish spots on the inner margin (in the ♀ is frequently a small pale yellowish spot on the costa, *anterior* to the second dorsal spot); *head ferruginous*; antennæ of the ♂ pectinated. V.

Larva in flat cases amongst fallen leaves. X—II.

Al.!! Bi.!! Brs.!! Ca. Da.!! K.! L.D.! Lw.! M.!! Ne.!! Pm.! Sc.!! Tn.!! Y.

I. PECTINEA. 6''' . F.-w. shining *brownish*, with two faint whitish spots on the inner margin; *head dark ochreous-brown*; antennæ of the male pectinated. IV e.

Larva dull whitish; *head* pale brown; 2nd seg. with black-brown plate above; 3rd and 4th segs. with pale grey plates. Mines in birch leaves, then cuts out a flat case and descends to the ground. VI—X.

L.D.! Ne.!! Pm. Sc.!! Y.!

I. TENUICORNIS. 7½''' . F.-w. *unicolorous*, fuscous; *head* pale yellowish; *antennæ slender*, in the ♂ slightly pubescent. VI.

M. West Wickham.

I. OEHLMANNIELLA. 6''' . F.-w. glossy *dark brown*, with two pale yellowish spots on the inner margin, *posterior* to the second of which is a smaller spot on the costa; *head ochreous*; *antennæ of the male* not pectinated. VI.

Larva in a flat case under fallen leaves. X—II.

Brs.!! L.D.! M. Pm. Y.

I. CAPITELLA. 7½''' . F.-w. dark brown, with a slight purple tinge; a *pale yellow fascia-form spot* lies on the inner margin before the middle, and beyond the middle are two large pale yellow opposite spots. V e.

Larva dull greenish, with a red patch on 9th seg.; head and 2nd seg. black. Burrows in the shoots of currant bushes.
IV.

Al.!! Brs. Ca. K. M. Pm. Sc. Tn.!!

Genus 11. NEMOPHORA.

Imago: head hairy above, in front smooth; antennæ very long, more than twice the length of the fore-wings; maxillary palpi five-jointed, folded; labial palpi short, cylindrical, hairy; hind-wings towards the base with hair-like scales.

Larva case-bearing, in a flat case.

We have four species in this genus, all very similar, with pale greyish-ochreous fore-wings.

N. SWAMMERDANMELLA. 10'''. F.-w. shining, unicolorous, pale ochreous, with very indistinct darker reticulations; h.-w. pale grey, *with pale ochreous fringes*. V e, VI.

Larva whitish, transparent; head black; 2nd seg. with a black plate; 3rd and 4th segs. with narrow purplish brown plates. In a flat case formed of pieces of dried leaves. On various plants.

Al.!! Brs.!! Ca. K. L.D.! M.! Ne.! Pm.! Sc.!! Tn.!!
Y.!

N. SCHWARZIELLA. 8'''. F.-w. rather elongate, the tip rather pointed, shining pale ochreous, obscurely reticulated with darker, and a faint fuscous spot on the disk beyond the middle; h.-w. pale grey, *with pale grey fringes*. V, VI.

Al.!! Bi.!! Brs.!! Ca. Da.! K. Lw. M.! Ne.! Pm.!!
Sc.!! Tn.!! Y.!

N. PILELLA. 8'''. F.-w. rather short, with the tip slightly rounded, shining pale fuscous, with darker reticulations; h.-w. greyish fuscous, *with dark grey fringes*. VI.

L.D. Sc.! Y. Rannoch, in Perthshire.

N. METAXELLA. 7''' — 7½'''. F.-w. rather short, with the tip rounded, shining pale ochreous, faintly reticulated with

pale fuscous, and a faint fuscous spot on the disk beyond the middle; h.-w. grey, with ochreous fringes. V, VI.

Ca. ! Lw. !! Sc. Y.

Genus 12. ADELA.

Imago: head hairy above, the face generally smooth; no maxillary palpi; labial palpi cylindric, hairy beneath; eyes remote in both sexes; antennæ much longer than the body (in the ♀ shorter than in the ♂).

Larva case-bearing, in a flat case.

We have six species in this genus, which may be thus tabulated:—

A. F.-w. with a distinct yellow fascia. *A. Sulzella* and *A. Degeerella*.

AA. F.-w. with one or two yellowish spots on the inner margin. *A. Fibulella*.

AAA. F.-w. without markings.

B. Palpi of the ♂ very hairy. *A. viridella* and *A. cuprella*.

BB. Palpi of the ♂ not hairy. *A. rufimitrella*.

The sexes of *A. viridella* and *A. cuprella* are very apt to be mistaken for distinct species, as the difference in the structure of the head is so great.

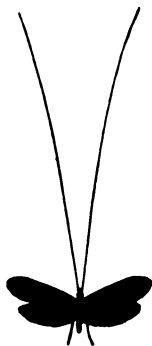
A. FIBULELLA. $4\frac{1}{2}$ "". F.-w. coppery fuscous, with a transverse pale yellowish spot on the inner margin beyond the middle; sometimes there is another spot near the base. V e, VI,

Larva white; head brown; 2nd seg. purplish brown above; 3rd and 4th segs. with greyish spots above. In a flat case on the leaves of *Veronica Chamædrys*. VIII—XI.

Brs. ! Da. ! L.D. M. Ne. ! Pm. !! Sc. !! Tn. Y. !

A. RUFIMITRELLA. $4\frac{1}{2}$ "". F.-w. dark bronzy green, towards the costa rather coppery; back of the head greyish ochreous. V.

Brs. Da. L.D. M. ! Ne. Pm. ! Sc. !! Tn. ! Y.



A. SULZELLA. 6''' . F.-w. yellow, streaked to the middle with violet-brown; *rather* beyond the middle is a *slightly curved* yellow fascia, bordered with violet. VI.

Al. ! Brs. Ca. ! K. Lw. Sc. !

A. DEGEERELLA. 9''' . Very like the preceding, but larger; the yellow fascia *straighter* and more *beyond* the middle. VI.

Larva yellowish white; head black; 2nd seg. blackish above; 3rd and 4th segs. with grey spots above. X—III. On wood anemone, &c.

Brs. Ca. K. L.D. Lw. !! M. ! Pm. !! Tn. !!

A. VIRIDELLA. 7½''' . F.-w. *bright bronzy green*, with a slight coppery tinge along the costa beyond the middle; head of the ♂ black (of the ♀ reddish grey). V e, VI.

Al. !! Bi. !! Brs. !! Ca. Da. K. L.D. Lw. !! M. !! Ne. !! Pm. !! Sc. !! Tn. !! Y. !!

A. CUPRELLA. 7¼''' . F.-w. bronzy green, tinged with *coppery violet*; head of the ♂ black, of the ♀ ferruginous. IV e.

Da. Ne. Wimbledon Common.

Genus 13. NEMOTOIS.

Imago: head hairy above; face smooth; no maxillary palpi; labial palpi cylindric, hairy beneath; *eyes of the ♂ large and approximating* (of the ♀ smaller and remote); antennæ very considerably longer than the body (in the ♂).

In this genus we have four species, which may be thus tabulated:—

A. F.-w. unicolorous, with no central dark fascia. *N. Scabiosellus*.

AA. F.-w. with a shadowy central dark fascia.

B. Antennæ of the ♀ thickened at the base. *N. fasciellus* and *N. minimellus*.

N. SCABIOSELLUS. 9''' . F.-w. *yellowish bronze*, darker along the costa, more yellowish towards the tip; head ferruginous. VI.

Bristol.

N. CUPRIACELLUS. 7''' . F.-w. golden green nearly to the middle, then *brilliant coppery*, with only a faint indication of a darker fascia; head ferruginous (the ♂ of this species is unknown). VI.

Brs. ! L.D. M. Pm. Sc. !! Sanderstead.

N. FASCIELLUS. 7''' . F.-w. brilliant coppery, *at the extreme base greenish golden*, with a very short black streak near the costa; a little beyond the middle is a *well-defined dark violet fascia*; head of the ♂ black, of the ♀ ferruginous. VI, VII.

Darenth Wood.

N. MINIMELLUS. 5½''' . F.-w. greenish golden, coppery towards the tip; *a black streak at the base near the costa* (longer than in the preceding species); beyond the middle is an indistinct dark violet fascia; h.-w. sometimes whitish, generally greyish violet; head of the ♂ black, of the ♀ ferruginous. VII.

Pm. Mickleham, and near Edinburgh.

Family III. MICROPTERYGIDÆ.

This family has been formed for the reception of one genus, which differs in many respects from the TINEIDÆ.

These insects all appear in the spring and early summer months. Several species may be found amongst birches on sunny afternoons in March and April. At the end of the latter month *M. subpurpurella* may be obtained amongst oaks. In May and June the smaller species, *Calthella*, *Seppella*, &c. are to be met with, frequenting flowers, the former being most partial to butter-cups and *Caltha palustris*, the latter to

Veronica Chamædrys; all are true day insects, and do not move about at night.

Genus 1. MICROPTERYX.

Imago: head hairy above, *a broad space above each eye naked*; maxillary palpi six-jointed, folded; labial palpi short, cylindrical, hairy; *antennæ shorter than the fore-wings*, sometimes much shorter; wings *rather transparent*; hind-wings with hair-formed scales.

Larva entirely unknown.

We have twelve species in this genus, some of which are very closely allied. The following is a rough attempt at a table of them:—

A. Head ferruginous.

B. F.-w. unicolorous in both sexes. *M. Calthella*.

BB. F.-w. greenish golden (in the male with silvery fasciæ).
M. Aruncella and *M. Seppella*.

BBB. F.-w. greenish golden, with reddish fasciæ. *M. Thunbergella*.

BBBB. F.-w. purple, with pale golden fasciæ. *M. Allionella*.

AA. Head black. *M. Mansuetella*.

AAA. Head dark fuscous. *M. purpurella* and *M. uninaculella*.

AAAA. Head grey. *M. Salopiella*, *M. semipurpurella*, *M. Sparmannella* and *M. subpurpurella*.

M. CALTHELLA. $3\frac{1}{2}'''$ — $4'''$. F.-w. greenish golden, with the base *from the costa to the inner margin* purple. V, VI.

Al.!! Brs.! Ca.! Da.!! K. L.D.! Lw.!! M.! Ne.!! Pm.! Sc.!! Tn.!! Y.!

M. ARUNCELLA. $3\frac{1}{2}'''$. F.-w. golden brown, with *the costa at the base* purple; in the ♂ is a *straight* slender silvery fascia in the middle, and a *small* silvery spot near the base. VI.

Brs.!! M.! Pm.! Tn.

M. SEPPELLA. 3'''—3½'''. F.-w. greenish golden, with *the costa at the base* purple; in the ♂ is a rather *oblique* silvery fascia in the middle, and *two* silvery spots (one towards the base, and one towards the tip). VI.

Bi. !! Brs. !! Da. ! L.D. ! Lw. ! M. Ne. ! Sc. !! Y. !

M. MANSUETELLA. 4'''. F.-w. pale golden green, with the base, a fascia before the middle, and the entire apical portion of the wing indistinctly purplish; *head deep bluish black*. V e, VI.

L.D. ! M. Pm. !! Y. West Wickham, and Stowmarket.

M. ALLIONELLA. 4½'''. F.-w. purple, with a pale golden fascia near the base, another in the middle, and a pale golden spot near the costa towards the tip. V, VI.

Brs. Da. L.D. ! M. ! Ne. ! Pm. Sc. !! Y. ! and near Birmingham.

M. THUNBERGELLA. 4½'''. F.-w. pale golden green, with reddish markings; a costal spot near the base; an oblique fascia before the middle; a fascia beyond the middle, forked on the costa, and sometimes connected with a spot towards the tip. V.

Brs. !! Da. ! L.D. ! Lw. ! M. Ne. ! Sc. !! Y. ! and Richmond, Yorkshire.

M. PURPURELLA. 5'''. F.-w. pale golden, much reticulated with purple, and with *the veins* also purple; beyond the middle of the inner margin is a *pale spot of the ground-colour*; head *dark fuscous*; antennæ *not half* as long as the f.-w. IV.

Brs. Ca. K. L.D. ! Lw. ! M. Ne. ! Pm. ! Sc. Tn. !! Y. ! and Darenth Wood.

M. SALOPIELLA. 4½'''—5'''. F.-w. *rather short and broad*, pale golden suffused with purple, *the veins* also purple; a *conspicuous rather triangular spot, of the pale ground-colour*, on the inner margin beyond the middle, *reaches fully half across the wing*; on the costa, beyond it, is a small pale spot. IV.

Shrewsbury, West Wickham, and Worthing.

M. SEMIPURPURELLA. $5\frac{1}{2}'''$ — $6'''$. F.-w. purple, *irrorated* with pale golden, with a *large pale golden spot* beyond the middle of the inner margin, *reaching half across the wing*; head greyish brown; antennæ *more than half* as long as the f.-w. IV.

Brs. Ca. K. L.D.! Lw.! M.! Ne.! Pm.! Sc.!! Tn.!! Y.!

M. UNIMACULELLA. $5'''$. F.-w. pale golden green, almost entirely suffused with purple; on the inner margin, beyond the middle, is a *conspicuous, narrow, curved, yellowish white spot*; head *dark fuscous*. IV.

L.D.! Lw. Ne.! Pm. Sc.! Tn. Y.!

M. SPARMANNELLA. $4\frac{1}{2}'''$. F.-w. golden, *delicately reticulated with purple*, with a spot on the inner margin, beyond the middle, of un-reticulated ground-colour; head greyish. IV, V.

L.D. M. Pm. Sc.! Y. and Worthing.

M. SUBPURPURELLA. $6'''$. F.-w. pale golden green, with a *faint appearance of a paler spot* on the inner margin beyond the middle, and *another between this and the tip*; on the disk are some scattered purple scales; head greyish brown. V.

Al.! Bi.!! Brs.!! Ca. Da.! K. L.D.! Lw.!! M.!! Ne.! Pm.! Sc.!! Tn.!! Y.!

Family IV. HYPONOMEUTIDÆ.

Imago: head rough or smooth; no maxillary palpi; labial palpi of moderate length; fore-wings elongate.

Larva frequently gregarious, living in a common tent.

This is a family of small extent, comprising only nineteen British species, arranged in six genera. Some of these are amongst the most abundant insects that we have, and hawthorn hedges and apple trees are not unfrequently stripped of their leaves in the summer by the ravages of *Hyponomeuta padellus*; on the other hand, some of the species of the genus

Anesychia are as prized for their rarity as for their beauty. Some of the species are single- and some double-brooded; the latter generally pass the winter in the pupa state, and make their appearance in the perfect state at the end of April or early in May. Thus the first warm summery weather we are sure to see the little *Swammerdamia Pyrella* flying merrily along the hedges, whilst the single-brooded species generally pass the winter as young larvæ, and do not feed up till the summer is well advanced.

The six genera may be thus tabulated :—

- A. Head rough.
 - B. Palpi porrected. Genus 1. SWAMMERDAMIA.
 - BB. Palpi drooping. Genus 2. SCYTHROPIA.
- AA. Head smooth.
 - C. Palpi porrected, short. Genus 5. CHALYBE.
 - CC. Palpi reflexed.
 - D. Terminal joint pointed. Genus 4. ANESYCHIA.
 - DD. Terminal joint blunt.
 - E. Hind-wings with a transparent patch at the base. Genus 3. HYPONOMEUTA.
 - EE. Hind-wings with no transparent patch at the base. Genus 6. PRAYS.

Genus 1. SWAMMERDAMIA.

Imago: head rough; labial palpi porrected, short, slender; hind-wings with a transparent patch at the base.

Larva solitary; in a web on the surface of leaves.

Pupa in a dense white cocoon.

We have six species in this genus, which do not seem to admit of tabulation.

S. APICELLA. 8'''. F.-w. whitish grey, dotted with blackish, the tip bright ochreous, preceded by some dark fuscous scales, and on the costa by a whitish spot. IV e, V.



Larva on plum.

Al.!! Bi.!! Brs.!! Ca. Da.! K. L.D. Lw. M. Ne.! Pm.! Sc.!! Tn.!! Y.!

S. CÆSIELLA. 6''' . F.-w. whitish grey, *paler on the inner margin*, with a dark grey spot on the inner margin before the middle, *not crossing the fold*; a whitish spot on the costa, near the tip, is preceded by a small blackish spot; h.-w. *pale grey*; head white. VI, VIII.

Larva on hawthorn. VI, IX.

Al.!! Brs.!! Ca. Da.!! K. Lw.!! M.! Ne.!! Pm.! Sc.!! Tn.!! Y.!

S. GRISEO-CAPITELLA. $5\frac{1}{2}$ '''—6''' . F.-w. *dark grey*, tinged with violet; the inner margin narrowly whitish, interrupted before the middle by a dark grey *fascia-form blotch*; a whitish spot on the costa before the tip; h.-w. *dark grey*; head *grey*, but sometimes white. V, VIII.

Larva pale green, with *darker green* dorsal and *subdorsal* lines. On birch. VII, IX.

Bi Da.! K.! L.D. Lw. M. Ne.! Pm. Sc.!! Y.!

S. PRUNI. 6''' . Undistinguished at present from the preceding. VIII.

Larva green; dorsal line darker; subdorsal lines *red*, swelling out to a spot on each seg. On plum. VI.

Discovered near Exeter, by Mr. Parfitt.

S. LUTAREA. $6\frac{1}{2}$ ''' . F.-w. grey, tinged with violet; *a dark cloud at the base*; *a fascia-form dark grey spot*, arising on the inner margin before the middle, and a whitish spot on the costa before the tip; h.-w. grey; head whitish. VII, VIII.

Bi. Brs. Ca. Da. Lw.! M. Pm.! Sc. Y.

S. PYRELLA. 5'''— $5\frac{1}{2}$ ''' . F.-w. dark grey, tinged with violet; inner margin sometimes whitish, intersected by a dark grey oblique blotch; on the costa, before the tip, is a small whitish spot; *tip coppery grey*; h.-w. *whitish towards the base* (in the ♂ conspicuously so); head whitish. IV, V, VIII.

Larva sulphur-yellow; subdorsal lines dark red-brown; the front half of the 4th to 12th segs. pale reddish brown. On hawthorn, apple, pear, &c. VII, IX.

Al.!! Bi.!! Brs. Ca.! K.! L.D. Lw.! M.! Ne.!! Pm.
Sc.!! Tn.!! Y.

Genus 2. SCYTHROPIA.

Imago: head rough; labial palpi short, slender and drooping; hind-wings with no transparent patch at the base.

Larva gregarious; in a common web.

Pupa angulated; suspended freely in the web; in no cocoon.

S. CRATÆGELLA. 7'''. F.-w. white, dusted with pale fuscous, with two greyish ochreous fasciæ, one before, one beyond the middle; costa and hind-margin dotted with grey. VII.

Larva dull reddish brown; very sluggish. On hawthorn. VI.

Brs.! Ca.! Lw. M. Pm.! and Lewisham.

Genus 3. HYPONOMEUTA.

Imago: head smooth; labial palpi rather short, reflexed, slender, hardly pointed; hind-wings with a transparent patch at the base.

Larva gregarious.

Pupa enclosed in a cocoon.

H. VIGINTIPUNCTATUS. 7'''. F.-w. dark leaden grey, with three longitudinal rows of black dots; fringes pale grey, *with a blackish blotch below the tip*. IV e, V, VIII.

Larva yellowish grey; spots black; the anterior dorsal spot of each seg. placed in a black blotch. On *Sedum Telephium*. VI e, VII, IX e, X.

Guildford; Beckenham.

H. PLUMBELLUS. 8½'''—9'''. F.-w. white, with a faint greyish tint, with four longitudinal rows of black dots; *in the middle of the fold is a black blotch; tip of the wing dark fuscous*. VII, VIII.

Larva extremely like the preceding. On spindle. V, VI.

Brs.!! Ca. Lw.! Box Hill; Worthing; and Richmond, Yorkshire.

H. IRRORELLUS. $11\frac{1}{2}'''$. F.-w. whitish, with three longitudinal rows of black dots; *a small greyish blotch lies on the fold before the middle, and a longer greyish blotch lies on the disk beyond the middle*; hind-margin clouded with grey. VII.

Larva on spindle. VI.

Near Wandsworth.

H. PADELLUS. $7''' - 10'''$. F.-w. white, more or less tinged with grey (sometimes quite grey), with three rows of black dots: *fringes pale grey, or white with the tips pale grey*. VII, VIII.

Larva grey, with black spots. On hawthorn, apple, &c. V, VI.

Bi.!! Brs.!! Ca.! Da.! K.! Lw.!! M.! Ne.! Pm.!! Sc.!! Tn.!! Y.!

H. EVONYMELLUS. $11'''$. F.-w. white, with *three* rows of black dots; *fringes white*. VII, VIII.

Larva yellowish grey, with black spots. On spindle. V, VI.

Bi.!! Brs.!! Ca.! K.!! L.D. Lw.!! M.! Pm.! Sc.!! Y.!

H. PADI. $11\frac{1}{2}'''$. F.-w. white, with *four* rows of black dots, *the lower row consisting of from ten to twelve dots*; *fringes white*. VII, VIII.

Larva greenish grey; spots small, black; a row of black blotches on each side; head black. On *Prunus Padus*. VI.

Brs.! Ca.! L.D. M.! Ne.!! Y.! and Huddersfield.

Genus 4. ANESYCHIA.

Imago: head smooth; labial palpi moderately long, reflexed, with the third joint pointed; hind-wings with no transparent patch at the base.

Larva solitary; in slight webs on the leaves of *Boraginaceæ*.

A. PUSIELLA. $1'' 1'''$. F.-w. white, with an irregular black streak running along the middle of the wing, from the base to near the hind-margin, and with a few irregular black spots; abdomen white. VI, VII.

Larva on *Lithospermum* and *Pulmonaria*. V.

Said to have occurred, long ago, at Darenth Wood and near Gravesend.

A. BIPUNCTELLA. $11\frac{1}{2}'''$. F.-w. dark fuscous along the costa, white along the inner margin; hind-margin and costa near the tip dotted with black; abdomen dull yellow. V, VIII.

Larva yellow, striped and spotted with black. On viper's bugloss. VII, X.

Reported to have been taken, many years back, near Aylesbury and Dover.

A. FUNERELLA. $7\frac{1}{2}'''$. F.-w. white along the inner margin, black along the costa and hind-margin; a large white blotch lies on the costa beyond the middle, and two black spots lie near the inner margin, not far from the base; h.-w. blackish, towards the anal angle white. VI.

Larva lemon-coloured, spotted with dark yellow on the back, and with a dark purplish grey subdorsal line. VIII.

Ca. ! L.D. Richmond, Yorkshire.



A. DECEMGUTTELLA. $10'''$. F.-w. whitish grey, with eleven rather large black spots; h.-w. rather dark grey. V, VI.

Larva yellow, greyish blue on the back, with a row of large black spots on each side. On *Lithospermum*. IX, X.
Darenth Wood.

Genus 5. CHALYBE.

Differs from the preceding genus in the shorter, porrected palpi.

C. PYRAUSTA. $8'''$. F.-w. sooty black, with three deep black spots *nearly in a line longitudinally*; hinder half of the abdomen yellow. V.

One specimen taken in Sutherlandshire, by Mr. Buxton.

Genus 6. PRAYS.

Imago: head smooth; labial palpi rather short, slender, hardly attenuated towards the tip; hind-wings with no transparent patch at the base.

Larva solitary.

P. CURTISELLUS. $7\frac{1}{2}$ '''. F.-w. white, with a rather triangular blackish blotch on the costa from the base to beyond the middle; hind-margin clouded with blackish (sometimes the f.-w. are entirely dull brownish). VI, VII.



Larva greenish, marbled with reddish brown; subdorsal lines darkest. In the young stems and shoots of ash. V.

Bi.!! Brs.!! Ca.! Da.! K.! L.D.! Lw.!! M.!! Ne.! Pm.! Sc.!! Y.!

Family V. PLUTELLIDÆ.

Imago: head rough; labial palpi with the second joint furnished beneath with a projecting tuft of scales; antennæ porrected in repose.

Larva fusiform; very active; not living in a case.

Pupa in a long tough cocoon, or in an open net-work cocoon.

This is also a family of small extent. We have only eighteen British species, which are divided amongst four genera. Several of the species are very common: *Plutella Cruciferarum* is sometimes a complete pest, and rather mischievous to turnip growers; *P. porrectella* is a quiet garden insect, always to be found amongst *Hesperis matronalis*; *Cerostoma radiatella* is generally abundant where oaks grow; and the pretty and singular *C. Xylostella* is sommon amongst

honeysuckle. Most of the other species are more or less local, and the splendid *C. asperella* is with us a great rarity.

Most of the species are in the larva state in May and June. The perfect insects appear from the end of the latter month to the beginning of autumn, and almost all the species hibernate in the perfect state. If we beat thatch in the spring, we are almost sure to dislodge some of the commoner species, and the conspicuous *Theristis caudella* may be met with on palings in April.

The four genera of this family may be thus tabulated:—

- A. Antennæ thickened with scales towards the base. Genus 1. EIDOPHASIA.
- AA. Antennæ not thickened.
 - B. Hind-wings with long fringes. Genus 4. THERISTIS.
 - BB. Hind-wings with moderate fringes.
 - C. Hind-wings broad. Genus 3. CEROSTOMA.
 - CC. Hind-wings rather narrow. Genus 2. PLUTELLA.

Genus 1. EIDOPHASIA.

Imago: antennæ thickened with scales towards the base; maxillary palpi undeveloped; labial palpi slender; the 2nd joint produced beneath in a slender tuft; terminal joint pointed.

E. MESSINGIELLA. 6''''. F.-w. shining fuscous, with a nearly straight pale yellow fascia almost in the middle (sometimes abbreviated, and forming a spot on the inner margin).
VI

Brs. K. Lw. ! M. Pm. !

Genus 2. PLUTELLA.

Imago: maxillary palpi short, slender; labial palpi with the 2nd joint produced beneath in a rather slender tuft; ter-

minal joint erect, pointed; fore-wings elongate, not indented below the tip; hind-wings lanceolate.

Pupa in an open net-work cocoon.

P. CRUCIFERABUM. $7\frac{1}{2}'''$. F.-w. *greyish brown*, spotted with dark brown; the inner margin whitish ochreous, with three rounded projections across the fold into the darker ground-colour. V, VIII.

Larva on cabbages and other *Cruciferae*. VI, VII, IX.

Al.!! Bi.!! Brs.!! Ca.!! Da.! K.! L.D.! Lw.!! M.! Ne.!! Pm.!! Sc.!! Tn.!! Y.!!

P. PORRECTELLA. $7'''$. F.-w. *whitish*, streaked with ochreous or pale fuscous; a sinuous fuscous streak runs from the base above the fold nearly to the tip; *hind-margin fuscous, spotted with black*. V, VII.

Larva green; spots small, black. On *Hesperis matronalis*. IV, VI.

Al.! Bi.! Brs.!! Ca. Da.! K. M.! Ne.!! Sc. Y.!

P. ANNULATELLA. $8'''$. F.-w. *greyish brown*, marbled with darker towards the costa; the inner margin pale ochreous, with a projection across the fold *at the base*, and two others, one in the middle and one beyond. IX.

Ne.!! Sc.!! Belfast and Isle of Portland.

P. DALELLA. $10'''$. F.-w. *grey, marbled with greyish brown*, with two small blackish blotches on the inner margin, one before, one beyond the middle. VIII, IX.

Larva on *Arabis*. VI.

Bi. L.D.! Ne.!! Sc. Huddersfield!! Conway; N. Wales!! and Richmond, Yorkshire.

Genus 3. CEROSTOMA.

Imago: maxillary palpi distinct, slender; labial palpi with the 2nd joint prolonged beneath into a tuft; terminal joint erect, pointed; fore-wings elongate or oblong, sometimes hooked; hind-wings slightly indented before the anal angle, with moderately long fringes.

Pupa in a close, firm cocoon.

In this genus we have twelve species, which may be tabulated as follows :—

- A. Fringe of the fore-wings not retuse before the tip.
 - B. F.-w. white. *C. sequella*.
 - BB. F.-w. grey. *C. vittella*.
 - BBB. F.-w. ochreous or brown.
 - C. F.-w. with a pale costal blotch at the base. *C. costella*.
 - CC. F.-w. with no pale costal blotch. *C. radiatella*.
- AA. Fringe of the f.-w. retuse below the tip ; f.-w. smooth.
 - D. Centre of thorax white. *C. lucella*.
 - DD. Thorax ochreous. *C. sylvella* and *C. alpella*.
- AAA. F.-w. almost hooked, surface rough. *C. horridella*, *C. scabrella* and *C. asperella*.
- AAAA. F.-w. decidedly hooked, surface smooth. *C. nemorella* and *C. Xylostella*.

C. SEQUELLA. 8''' . F.-w. *white*, chequered with black, with an indented black blotch along the inner margin from the base to beyond the middle. VII, VIII.

Larva on limes and sallows. V, VI.

Brs. Ca. ! Da. ! K. L.D. Lw. M. Sc. !! Y.

C. VITTELLA. 8½''' . F.-w. *grey*, mottled with darker, with an indented black blotch on the inner margin from the base to beyond the middle (sometimes the dorsal half of the wing is entirely blackish). VII, VIII.

Larva brown-black ; the back whitish. On elm, beech, &c. V.

Brs. !! Ca. Da. !! K. L.D. Lw. !! M. Ne. Pm. !! Sc. !! Y. !

C. RADIATELLA. 8''' . *Very variable*. F.-w. greyish ochreous, pale ochreous, reddish ochreous or fuscous, *with a dark spot above the fold beyond the middle*, sometimes with a thick dark longitudinal streak ; sometimes with numerous pale streaks on a dark ground. VIII—X.

Larva on oaks. V, VI.

Bi. !! Brs. !! Ca. ! Da. !! K. ! L.D. Lw. !! M. Ne. !! Pm. !! Sc. !! Tn. !! Y. !

C. COSTELLA. 8'''. F.-w. variable in colour, from greyish ochreous to brown, with a conspicuous white blotch near the costa, reaching from the base to the middle. VII e—IX.

Larva on oaks. V, VI.

Bi. Brs.!! Ca. Da.! K.! L.D. Lw.! M. Ne.!! Pm.!! Sc.!! Tn.!! Y.!

C. SYLVELLA. 9'''. F.-w. pale ochreous, slightly reticulated with fuscous, with two oblique dark fasciæ, rather interrupted towards the costa. VIII, IX.

Larva on oak. VI.

Brs.!! K. L.D. M. Pm. Sc. Y.

C. ALPELLA. 8'''. F.-w. pale ochreous, indistinctly reticulated with pale fuscous, with two fuscous streaks from the inner margin, not reaching more than half across the wing; head and thorax pale ochreous. VIII.

Brs. Lw. Pm. Y. and Lewisham.

C. LUCELLA. 8'''. F.-w. ochreous, reticulated with pale fuscous, with a narrow white streak along the inner margin to the middle, above which are two indistinct dark blotches; head and centre of the thorax white. VII.

Larva on oaks. VI.

Lw. M. Y.

C. HORRIDELLA. 9'''. F.-w. dark fuscous, with a slight violet tint, with a darker blotch along the inner margin, and three black tufts below the fold. VII.

Larva on sloe and apple. VI.

New Forest.

C. SCABRELLA. 10'''. F.-w. whitish ochreous, streaked with fuscous; a dark fuscous blotch along the inner margin, and three black tufts below the fold. VII, VIII.

Larva on apple. V.

Brs.! Da.! L.D. Sc. Y. and New Forest.

C. ASPERELLA. 10'''. F.-w. yellowish white, with a large triangular blotch, on the middle of the inner margin, of raised

brownish scales, mixed with bluish black; a small bluish black dot lies in the middle of the hind-margin. VII e—X.

Larva on apple. VI.

Formerly at Glanville's Wootton, near Sherborne.

C. NEMORELLA. 11'''. F.-w. whitish, streaked with ochreous or fuscous; a black spot on the fold before the middle. VI, VII.

Larva ochreous flesh-colour; dorsal line whitish; an oblique black line on the sides of the 7th and 9th segs. On honeysuckle. V.

Brs. Da. K. L.D. M. Sc.!! Y.

C. XYLOSTELLA. 10'''. F.-w. reddish brown; a rather broad yellowish white streak runs along the inner margin, and from it an extremely narrow white streak runs obliquely half across the wing beyond the middle. VII, VIII.

Larva pale yellowish green, with a broad brownish red stripe all along the back. On honeysuckle. V.

Bi.!! Brs.!! Ca.!! Da.!! K.!! L.D.!! Lw.!! M. Ne.!! Pm. Sc.!! Tn.!! Y.



Genus 4. THERISTIS.

Differs from the preceding genus by the longer tuft of the palpi, by the more pointed fore-wings, and the longer fringes of the hind-wings.

T. CAUDELLA. 1'' 1''' — 1'' 2'''. F.-w. pale greyish ochreous, more or less streaked with fuscous; a dark fuscous streak runs from the base above the fold, and before the middle of the fold is a dark fuscous spot, and another on the disk beyond the middle. VIII, IX, IV h.

Larva greenish grey, marbled with dull flesh-colour; dorsal line opaque, whitish; 3rd and 4th segs. each with two conspicuous black spots above. On spindle. VI.

Brs. Ca. K. Lw. and Dartford Heath.

Family VI. GELECHIDÆ.

Imago: head smooth; maxillary palpi undeveloped; labial palpi recurved, long or very long, sometimes with the 2nd joint prolonged as a tuft; fore-wings oblong or elongate; hind-wings rather broad, trapezoidal or ovate, generally indented.

Larva with sixteen feet; of very various habits.

This family, as now restricted, is still a very extensive one. We have in this country no less than 166 species, divided amongst 18 genera; but they are very unequally divided, as the two genera *Depressaria* and *Gelechia* alone comprise 140 species, the remaining 26 being thus divided amongst 16 genera.

Among the species of this family we find considerable variety in habit, form and colouring. Many species are remarkably active, both in the larva and perfect states. A larva of *Depressaria applana* placed on a sheet of paper will exhibit dancing powers of no ordinary character, and the rapid motions of many of the genus *Gelechia* on the wing too often enable them to baffle the utmost vigilance of the collector. On the other hand, some species are remarkably sluggish, such as *Orthotelia Sparganella* and *Phibalocera Quercana*. These two last-mentioned insects are very good instances of the great variety of form; and the difference of a narrow-winged *Gelechia*, such as *tenebrella*, and the broad-winged insects of the genera *Pleurota* and *Harpella* is very striking: the brilliant *Harpella Geoffrella* vies in splendour with the gay-coloured 'Long Horns,' whilst many species of the genus *Gelechia* are as dull and monotonous as possible.

These insects make their appearance in the perfect state between the months of May and September. They might thus be considered as regular summer insects, but for the fact that nearly every *Depressaria* hibernates in the perfect state, and many of these are met with in the spring. The abundant *Depressaria applana*, flitting along the leafless hedges on warm evenings in February and March, is almost certain to attract the attention of every tyro.

In so extensive a family, as would naturally be expected, are several species of extreme rarity, but the number of these is yearly decreasing, as by the discovery of their larvæ and habits we soon learn how to collect them freely.

The 18 genera represented here may be tabulated as follows:—

- A. Second joint of the palpi not very long.
- B. Second joint of the palpi slender.
 - C. Antennæ shorter than the f.-w. Genus 1. ORTHOTÆLIA.
 - CC. Antennæ longer than the f.-w. Genus 3. PHIBALOCERA.
 - BB. Second joint of the palpi considerably thickened beneath.
 - D. F.-w. ovate, with raised tufts. Genus 2. ENICOSTOMA.
 - DD. F.-w. ovate, smooth. Genus 5. DEPRESSARIA.
 - DDD. F.-w. indented below the tip. Genus 4. EXÆRETIA.
 - BBB. Second joint of the palpi slightly thickened beneath.
 - E. Terminal joint of the palpi thin. Genus 7. GELECHIA.
 - EE. Terminal joint thickened with scales above.
 - F. H. w. deeply emarginate before the tip. Genus 8. PARASIA.
 - FF. H.-w. slightly emarginate before the tip. Genera—6. PSORICOPTERA. 10. CHELARIA.

- BBBB. Second joint of the palpi with loose projecting scales. Genus 9. CLEODORA.
- BBBBB. Second joint of the palpi with a projecting tuft.
G. F.-w. not emarginate below the tip. Genera—11. ANARSIA. 12. YPSOLOPHUS.
- GG. F.-w. emarginate below the tip.
H. Terminal joint of the palpi concealed in the scales of the 2nd joint. Genus 13. APLOTA.
- HH. Terminal joint of the palpi not concealed. Genera—14. NOTHRIS. 15. SOPHRONIA.
- AA. Second joint of the palpi very long.
I. Second joint of the palpi very much thickened with scales.
K. F.-w. elongate. Genus 16. PLEU-ROTA.
- KK. F.-w. oblong. Genus 17. HARPELLA.
- II. Second joint of the palpi not much thickened with scales. Genus 18. HYPERCALLIA.

Genus 1. ORTHOTELIA.

Imago: antennæ of moderate length; labial palpi rather short, reflexed, slender, pointed; abdomen elongate, convex; fore-wings dilated posteriorly and truncate, with short fringes.

O. SPARGANELLA. 10'''—11½'''. F.-w. pale ochreous, streaked with dark fuscous, sometimes with a purple tinge; along the fold are several dark spots; h.-w. white. VII, VIII.

Larva dull grey; head reddish brown; anal seg. much flattened. In leaves and stems of *Sparganium*. V, VI.

Bi. !! Brs. Ca. ! Lw. M. Sc. !! Y.

Genus 2. ENICOSTOMA.

Imago: labial palpi arched; the 2nd joint long, with appressed scales; terminal joint smooth, ascending, pointed; fore-wings rather broad, ovate.

E. LOBELLA. 8''' . F.-w. dark grey, with five tufts of black scales, three before and two beyond the middle. VI.

Larva pale green, with a whitish green line on each side of the back. Under turned-down sloe-leaves. VIII, IX.

Ca. ! Lw. Pm. and Lewisham !

Genus 3. PHIBALOCERA.

Imago: antennæ much longer than the wings; labial palpi moderately long; 2nd joint with appressed scales; terminal joint slender, pointed; wings oblong, with moderate fringes; costa of fore-wings arched; tip acute.

P. QUERCANA. 9''' . F.-w. pale rosy grey, clouded with rosy, and with obscure darker markings; base of the costa and a costal spot beyond the middle pale yellow. VII, VIII.

Larva pale green; dorsal line darker, edged with whitish green; beneath a flat web on the under side of leaves of oak, beech, apple, &c., &c. V, VI.

Bi. !! Brs. !! Ca. !! Da. ! K. ! L.D.
Lw. !! M. !! Ne. Pm. !! Sc. !! Tn. !! Y.



Genus 4. EXÆRETIA.

Imago: antennæ of the male pubescent; labial palpi moderately long; 2nd joint beneath resembling a brush; terminal joint slender, smooth, pointed; wings oblong, with short fringes; costa of fore-wings slightly sinuated, and the fringes below the tip slightly emarginate.

E. ALLISELLA. 10'''. F.-w. leaden grey, with an oblique reddish grey streak on the costa a little beyond the middle, in which is a dark fuscous spot. VII.

Bi. L.D. M. and coast of Norfolk.

Genus 5. DEPRESSARIA.

Imago: labial palpi moderately long, reflexed; second joint beneath like a brush; terminal joint slender, smooth, pointed; abdomen flat, with projecting scales at the sides; fore-wings not emarginate on the costa, slightly rounded at the tip; hind-wings generally with the hind-margin indented towards the anal angle.

This extensive genus contains thirty-nine British species, and, unfortunately, does not admit of tabulation; but the first twenty-five species may be distinguished by the pale patch at the base, bordered by a more or less distinct dark streak from the inner margin, which loses itself when half across the wing. The species which follow after *Rotundella* want this character; but, on the other hand, they have the extreme base of the inner margin whitish, edged by an oblique dark line from the base to the inner margin.

D. COSTOSA. 10'''. F.-w. rather pointed, pale ochreous, clouded with reddish fuscous, with a dark blotch on the disk beyond the middle, before which are two black dots; fringes reddish fuscous. VII, VIII.

Larva dark grey; head, 2nd seg. and spots black. On broom and furze. V, VI.

Bi. !! Brs. !! Ca. Da. ! K. L.D. Lw. !! M. ! Ne. Sc. !! Y. !

D. LITURELLA. 10'''. F.-w. rather broad, pale ochreous, with darker ochreous clouds; on the disk are two black dots, one before and one beyond the middle; beneath the latter is a brownish blotch, in which a dark ochreous streak terminates. VII, VIII.

Larva blackish; head, 2nd seg. and spots black. In rolled-up leaves of knapweed. V, VI.

Al. Bi.!! Brs. Ca. Da.!! K. L.D. Lw.!! M.! Ne.! Pm. Sc.!! Y.!

D. PALLORELLA. 10'''. F.-w. rather *narrow*, pale ochreous, with two black dots on the disk, one before and one beyond the middle; beneath these lies an oblique *dark brown streak*, which rises on the inner margin near the base. VIII, IX.

Brs.! Lw. M.! Sc. Dover, and Isle of Wight.

D. BIPUNCTOSA. 9'''—10'''. F.-w. very pale ochreous; on the disk are two black dots, one before and one beyond the middle; below them is a *faint fuscous blotch*. VII e.

Freshwater, Isle of Wight; New Forest.

D. UMBELLANA. 10'''. F.-w. pale ochreous, *with all the veins and the inner margin dark fuscous*; a black spot lies on the disk before the middle, and a second, much smaller, beyond the middle. VIII—X.

Larva dull greenish grey; head, 2nd seg. and spots black. On furze. VI, VII.

Bi.!! Brs.!! Ca. Da. L.D. Lw.! M.! Sc.!! Y.

D. ASSIMILELLA. 9'''. F.-w. pale ochreous, clouded with fuscous; on the disk before the middle are two black dots (the lower one *very minute*); they are followed by a fuscous cloud, which extends obliquely towards the anal angle; fringes *pale greyish ochreous*; h.-w. *whitish grey*. VI, VII.

Larva brown; head, 2nd seg. and spots black. Between united broom twigs. III, IV.

Bi.!! Brs. Da.! K. L.D. M. Ne.!! Sc. Tn.!! Y.!

D. NANATELLA. 7'''. F.-w. rather short, whitish ochreous, irrorated with fuscous, and posteriorly much clouded with fuscous; on the disk near the middle is a black dot, beyond which, towards the costa, is a fuscous blotch; h.-w. *greyish fuscous*. VIII.



Larva yellowish green; head and 2nd seg. black; spots grey. In leaves of carline thistle. IV, V.

Brs. ! Mickleham ! Dover, Charlton, Torquay, Lancashire coast !!

D. ATOMELLA. $9\frac{1}{4}'''$. F.-w. ochreous, clouded with red-dish grey, with an oblique dark fuscous dash near the base of the inner margin; on the disk before the middle are two black dots, *followed by a few white scales*; beyond the middle is a small fuscous blotch, and below it are *two faint white dots*; h.-w. pale grey. VIII, IX.

Larva on broom and *Genista tinctoria*. V, VI.

Brs. Ca. K. M. ! and Charlton.

D. ARENELLA. $10'''$. F.-w. *pale ochreous, spotted and clouded with dark fuscous*; two black dots on the disk before the middle are followed by a dark fuscous blotch, obliquely beyond which is a dark fuscous spot. VIII.

Larva green, darker along the back; head pale brown. In leaves of knapweed and thistle. VI, VII.

Bi. !! Brs. !! Ca. ! Da. ! K. ! L.D. Lw. !! M. Ne. Sc. !! Tn. Y. !!

D. PROPINQUELLA. $8\frac{1}{2}'''$. F.-w. rather *short*, pale ochreous, marbled with darker; two black dots on the disk before the middle are followed by a dark fuscous *almost black blotch, which reaches nearly to the costa*. IX, X.

Larva pale green; dorsal line darker; head, 2nd seg. and spots black. Under a web on the under side of thistle leaves. VII, VIII.

Bi. !! Brs. Ca. ! L.D. Lw. ! Sc. !! Y.

D. SUBPROPINQUELLA. $10'''$. F.-w. rather *elongate*, brownish ochreous; the dorsal streak at the base almost obsolete; two black dots on the disk before the middle are followed by a small *fuscous* (rarely dark fuscous) blotch. IX.

Larva green; head and 2nd seg. black. On the under side of thistle leaves. VI, VII.

Bi. !! Brs. Ca. ! Lw. Sc. ! Y. Epping, Folkestone and Dublin.

D. ALSTRÆMERIANA. 8''' . F.-w. *white*, dusted with pale greyish ochreous ; on the disk before the middle are two black dots ; beyond is a dark blotch, touching the costa, and terminating in a *dark red spot*.

VIII.

Larva green ; dorsal and subdorsal lines darker. In folded leaves of hemlock (*Cornium maculatum*). VII.



Bi. Brs. ! Ca. Da. ! K. L.D. Lw. ! Ne. !! Sc. !! Y. ! Near Norwich.

D. CINIFLONELLA. 9½''' . F.-w. *reddish grey*, dusted with *whitish* ; the base and costa nearly to the middle almost white ; before the middle of the disk are two black dots, frequently connected, the lower one rather elongated ; beyond are *two short black streaks, frequently united into a blotch*. VII.

Rannoch, in Perthshire.

D. PURPUREA. 8''' . F.-w. *reddish fuscous*, dusted with *pale yellowish grey* at the base and along the costa ; on the disk before the middle are two black dots, followed by some white scales ; beyond is a large *dark fuscous blotch*, touching the costa. VIII.

Larva on *Torilis Anthriscus*. VI.

Al. Bi. Brs. Ca. ! K. ! Lw. ! Tn.

D. CAPREOLELLA. 7''' . F.-w. greyish ochreous, with a slight reddish tint along the inner margin ; before the middle of the disk are two black dots, followed by some white scales, and beyond, in a line with the lower one, are *two whitish dots, surrounded by dark fuscous*. IX.

Larva greenish. On radical leaves of *Pimpinella Saxifraga*. VI.

Br. Lw. and Sanderstead and Mickleham.

D. HYPERICELLA. 9''' . F.-w. *red*, suffused with *bluish black* ; the base and basal portion of the costa often *pale yellow* ; on the disk before the middle is a curved black streak ; above it is generally a yellow blotch on the costa ; *head and centre of thorax pale yellow*. VII.

Larva dull green ; head and 2nd seg. yellowish brown. In screwed-up tops of *Hypericum*. V, VI.

Brs. ! Da. ! M. ! Ne. ! Sc. and Lewisham !

D. CONTERMINELLA. 9''' . F.-w. *reddish brown, dusted with pale yellowish grey* ; the extreme base pale yellowish grey ; before the middle of the disk is a curved black streak ; beyond the middle is a yellowish grey dot, edged with dark ; *head and centre of thorax pale greyish ochreous*. VII, VIII.

Larva in terminal shoots of willows and osiers. V, VI.

Bi. !! Brs. !! Ca. ! Da. ! Y. !

D. ANGELICELLA. 8½''' . F.-w. *pale yellow, clouded with reddish* ; on the disk before the middle are one or two black dots ; beyond is a blackish blotch, *often placed in an oblique cloudy fascia*. VII.

Larva greenish grey ; head and 2nd seg. reddish ochreous ; spots black. In screwed-up leaves of *Angelica sylvestris*. VI.

Bi. !! Brs. Ca. ! Da. M. ! Sc. !! Tn. and Dunoon !

D. CARDUELLA 7½''' . F.-w. *pale reddish ochreous, slightly dusted with fuscous* ; on the disk before the middle are two black dots ; beyond the middle is a small dark blotch, and another black dot. VII, VIII.

Larva greyish green ; head blackish. Under thistle leaves. VI, VII.

Pm. Sc. Lynmouth, and Dartford Heath.

D. OCELLANA. 10'''—11''' . F.-w. *pale greyish ochreous, dusted with fuscous* ; on the disk before the middle are two black dots ; *beyond is a fuscous blotch, edged beneath with red, terminating in a white dot*. VIII.

Larva on willows. VII.

Bi. !! Brs. Ca. Da. K. L.D. Lw. !! M. Sc. !! Y. !

D. YEATIANA. 9½''' . F.-w. *pale greyish ochreous, with a dark streak from the inner margin near the base* ; on the disk before the middle are two black dots, closely followed by a fuscous blotch, beyond which is a white dot ; the veins sometimes streaked with fuscous. IX.

Bi. !! Brs. Ca. L.D. Lw. !! M. Y. !

D. APPLANA. 10'''. F.-w. reddish fuscous, clouded with fuscous, sometimes with the base strikingly paler; before the middle of the disk are two black dots, *generally followed by some white scales; beyond are two white dots*; fringes of h.-w. with the tips *not* reddish. VII—IX.

Larva green; dorsal and subdorsal lines darker; spots small and black. In folded leaves of various *Umbelliferae*. VI, VII.

Bi.!! Brs.!! Ca.! Da.!! K.! L.D.! Lw.!! M.! Ne.!! Pm.!! Sc.!! Tn.!! Y.!!

D. CILIELLA. 11'''. Larger and redder than the preceding, and the *fringes of the h.-w. tinged with reddish at the tips*. VIII—X.

Larva on Angelica. VII.

Bi.!! Brs. Ca. L.D.! Lw.! Ne. Sc.!! Y.!

D. GRANULOSELLA. 8'''. F.-w. *greyish ochreous*, clouded with fuscous, with the base paler; on the disk before the middle are two black dots, the *lower one elongated*; beyond the middle is an *indistinct white dot*. IX.

Alkham and Deal.

D. ROTUNDELLA. 7½'''. F.-w. *narrow*, pale greyish ochreous, with two black dots on the disk, *one before* and one beyond the middle. IX.

Larva on the flowers of Echium vulgare? Mickleham, Sandderstead, Folkestone, and Isle of Wight.

D. DEPRESSELLA. 7'''. F.-w. reddish brown; on the inner margin beyond the middle is a large pale yellowish spot, followed by a *pale yellowish angulated fascia*, indistinct towards the costa; *head pale yellow*. IX, X.

Larva reddish green; head and 2nd seg. black; spots enamelled, white. In umbels of carrot and parsnip. VII, VIII.

Southchurch, Essex and Folkestone.

D. PIMPINELLE. 8'''—8½'''. F.-w. fuscous, *towards the costa reddish*; on the disk are numerous short dark streaks,

of which one before and one beyond the middle are conspicuous; the pale hinder fascia is very indistinct, and rather sharply angulated. IX.

Larva on Pimpinella Saxifraga. VII, VIII.

Bi. L.D. ! Lw. Y. and Stoa's Nest, also in Dorsetshire and near Plymouth.

D. ALBIPUNCTELLA. $8\frac{1}{2}'''$. F.-w. reddish brown, clouded with darker; on the disk before the middle is a short oblique dark streak; beyond is a white dot, closely followed by the pale, not acutely angulated fascia. VII, VIII.

Larva like that of *applanata*, but subdorsal lines hardly darker than ground-colour; spots small and grey; 2nd seg. speckled with black. On *Chærophyltum*. VI.

Brs. Ca. K. Lw. Sc.

D. EMERITELLA. $11'''$. F.-w. reddish brown, dusted with whitish; on the disk before the middle is an elongate whitish spot; beyond is a round whitish spot; hinder fascia rather sharply angulated, but indistinct towards the inner margin; head and centre of thorax pale yellow. VIII.

Larva green; dorsal and subdorsal lines darker; head yellowish green; 2nd seg. dotted with black. In leaves of tansy. VII.

Locality unknown; one specimen in Mr. Shepherd's collection.

D. PULCHERRIMELLA. $8\frac{1}{2}'''$. F.-w. reddish fuscous, dusted with whitish; on the disk are several short dark streaks; an oblique one before the middle, followed by some whitish scales is conspicuous; a white dot lies on the disk beyond the middle; the hinder fascia is rather acutely angulated; head pale reddish grey. VII, VIII.

Larva on the flowers of *Bunium flexuosum*. VI, VII.

Bi. ! Da. L.D. ! Sc. !! Y. Sanderstead and Mickleham.

D. DOUGLASSELLA. $8\frac{1}{2}'''$. F.-w. broader and darker than in the preceding; the hinder fascia less acutely angulated; head and centre of thorax white. VII, VIII.

Larva on one of the *Umbelliferae*. VI.

Lw. Mickleham, Folkestone and Isle of Wight.

D. WEIRELLA. $9\frac{1}{4}'''$. F.-w. *reddish brown, clouded with darker*, with one or two *obscure* pale spots along the disk; the hinder fascia indistinct, and hardly acutely angulated; h.-w. *whitish* at the base. VII, VIII.

Larva undistinguished from that of *Applana*. In leaves of *Anthriscus sylvestris*. V, VI.

Lewes and Lewisham.

D. CHÆROPHYLLI. $9\frac{1}{2}'''$. F.-w. greyish fuscous; *the base of the costa tinged with reddish*; along the disk are numerous short black streaks, *interspersed with whitish scales*; hinder fascia rather acutely angulated. VIII.

Larva yellowish green; dorsal and subdorsal lines interrupted, blackish green; spots black. In umbels of *Chærophyllum temulentum*. VII.

Brs. Ca. K. Lw. Ne. Sc.

D. ULTIMELLA. $9'''$. F.-w. greyish fuscous, *with a reddish tinge*, with numerous longitudinal dark fuscous streaks; the pale fascia acutely angulated, but rather indistinct; h.-w. *whitish grey*. IX.

Brs. Ca.! K. Lw. Sc. and Folkestone.

D. NERVOSA. $10'''$ — $11'''$. F.-w. glossy reddish brown, *with a very slight reddish tinge*, with numerous longitudinal darker streaks; the pale fascia is extremely angulated, and *closely approaches the tip of the wing*; h.-w. *pale grey*. VIII, IX.

Larva blue-black, with an orange stripe on each side; spots large, black, surrounded by white. In umbels of *Ænanthe crocata*. VI, VII.

Al. Bi.!! Brs. Ca.! Lw.!! Ne. Sc.! Dawlish, Dunoon!! and Ardrossan!!

D. LIBANOTIDELLA. $10'''$ — $11'''$. F.-w. reddish brown, *the costa at the base broadly reddish ochreous*; on the disk are numerous longitudinal dark streaks; the pale fascia rather sharply angulated, but not very distinct. IX.

Larva dull grey; spots shining black, in whitish rings; head and 2nd seg. black. On *Athamantha libanotis*. VII, VIII.

Newhaven.

D. BADIELLA. 11''' . F.-w. *rather broad, dull dark brown*, with some obscure darker streaks; along the disk are some dark spots, mixed with some whitish scales; pale fascia indistinct, and *not sharply* angulated. VIII.

Bi. Brs. Ca. K. Lw.

D. PASTINACELLA. 11½''' . F.-w. *rather narrow, pale greyish fuscous*; before the middle are three blackish dots, *two on the disk* and one on the fold; beyond the middle are *two others on the disk*; pale fascia rather indistinct. IX.

Brs. Ca. ! Lw. Mickleham and Folkestone.

D. HERACLIANA. 1'' — 1'' 1''' . F.-w. *rather broad, greyish ochreous*, with numerous short fuscous streaks; along the disk are two or three darker spots, surrounded with whitish scales; the pale fascia is rather acutely angulated. VIII, IX.

Larva dull grey above, dull yellow at the sides; head, 2nd seg. and spots black. In umbels of *Heracleum Sphondylium*. VII.

Bi.!! Brs. Ca. ! Da.!! K. ! L.D. ! Lw. ! Ne.!! Sc.!! Y. !

Genus 6. PSORICOPTERA.

Imago: labial palpi rather long, reflexed; 2nd joint beneath like a brush; terminal joint thin and pointed, above with projecting scales; abdomen rather depressed; fore-wings elongate, with raised tufts of scales.

P. GIBBOSELLA. 8''' . F.-w. *marbled grey*, with a short black streak from the base to the inner margin; a blackish blotch on the costa about the middle; along the fold are three tufts of dark scales; the pale fascia rather indistinct. VII.

Larva on sallows. VI.

Brs. M. Hainault Forest and Chesterfield.

Genus 7. GELECHIA.

Imago : labial palpi moderately long or long, reflexed ; 2nd joint beneath slightly broader, scarcely like a brush (sometimes quite smooth) ; terminal joint slender, smooth and pointed ; fore-wings oblong or elongate ; hind-wings trapezoidal, slightly or deeply emarginate below the tip.

A table of our 101 species is unfortunately not possible.

G. CINERELLA. 8'''—9''' . F.-w. shining, yellowish *grey*, with no markings. VI, VII.

Brs. !! Ca. Da. ! K. L.D. Lw. M. Pm Y. !

G. RUFESCENS. 8''' . F.-w. reddish *ochreous*, with the veins slightly paler, and a faint appearance of a dark spot on the disk beyond the middle. VI, VII.

Larva black in front, white behind, with a blackish stripe on each side of the back, and blackish lateral lines. In tubularly-rolled grass-leaves. IV, V.

Bi. !! Brs. !! Ca. K. Lw. ! M. Pm. Tn. !! Y.

G. INORNATELLA. 6½''' . F.-w. very *pointed at the tip*, pale greyish *ochreous*, slightly streaked with darker, with *three black dots*, one on the fold and two on the disk. VI.

The fens near Cambridge.

G. GERRONELLA. 5'''—6''' . F.-w. *ochreous, clouded with fuscous*, especially towards the costa and hind-margin ; *an indistinct oblique dark fascia* goes from the middle of the costa to the anal angle ; there are three black dots, one on the fold and two on the disk. VII.

Brs. ! Ca. Worthing, Dartford Heath and West Wickham.

G. VILELLA. 9½''' . F.-w. rather *narrow*, pale greyish *ochreous*, dusted with fuscous ; at the base of the inner margin is a black spot ; on the disk are *two indistinct pale spots, containing some dark scales, and hence appearing ocellated*. IX.

Worthing ! Folkestone ! and Isle of Wight !

G. HIPPOPHAELLA. 8'''. F.-w. pale *greyish* ochreous, with an *oblong black spot at the base of the costa*, and a blackish dot at the base of the inner margin; there are three other blackish dots, one on the fold and two on the disk; pale fascia faintly indicated. VIII, IX.

Larva pale green or yellowish, with paler dorsal line; head pale brown; spots black. Between terminal leaves of *Hippophae rhamnoides*. VII.

Near Deal.

G. MALVELLA. 9'''. F.-w. pale brownish ochreous, with an *obscure dark fascia beyond the middle*, preceding the pale angulated fascia; before the middle are two brownish spots, one on the fold and one on the disk; a third spot can sometimes be seen on the disk beyond the middle. VI, VII.

Larva whitish ochreous, with reddish spots; head blackish. In seeds of hollyhock. IX, X.

Ca. K. M.! Sc. A common garden insect, and a pest in the larva state.

G. POPULELLA. 8'''. F.-w. greyish fuscous, clouded with fuscous along the inner margin, with several blackish spots along the fold and disk; the pale angulated fascia *is distinctly indented towards the costa*; hind-margin and tip of the costa dotted with black. Varies much in the intensity of the markings. VI e—VIII.

Larva in rolled-up leaves of poplar, willow and birch. V e, VI b.

Bi.!! Brs.!! K.! Lw.!! M.! Pm.! Sc. Y.!

G. NIGRA. 7½'''. F.-w. dark fuscous, with numerous whitish scales, and with some obscure darker markings, of which three in the middle are the most distinct; the pale fascia is angulated. VI, VII.

Al. Ne. Wanstead.

G. TEMERELLA. 5½'''. F.-w. black, *with a deeper black cloudy fascia beyond the middle*, and the usual three spots deeper black. VII.

Larva greenish white; head, 2nd seg. and spots black. In terminal shoots of dwarf willows. VI.

Near Liverpool.

G. LENTIGINOSELLA. $7\frac{1}{2}'''$. F.-w. dark brownish; the three usual spots *black, surrounded by reddish ochreous*; the pale fascia forms two reddish ochreous spots, that on the costa more distinct. VII, VIII.

Larva pale green; head and 2nd seg. black; spots greyish. In terminal shoots of *Genista tinctoria*. V, VI.

Bi. Brs. Epping, Tunbridge Wells, and Worcester.

G. VELOCELLA. $7\frac{1}{2}'''$. F.-w. dark fuscous; the three spots darker and slightly raised; the pale fascia forms two *whitish* spots, that on the costa the more distinct, *with its apex pointing inwards*. IV e, V, VIII.

Larva at the lower part of the stem of *Rumex acetosella*. VI.

Bi. Ca. M. and Barnes Common.

G. FUMATELLA. $7'''$. F.-w. greyish fuscous, clouded with darker posteriorly; the three spots *black, preceded and followed by some whitish scales*; the pale fascia angulated, dingy ochreous.

Bi. and Dawlish Warren.

G. ERICETELLA. $7\frac{1}{2}'''$. F.-w. fuscous, with four black spots (the additional one nearer to the base), *each preceded and followed by some whitish scales*; hind-margin and tip of the costa dotted with black. IV e—VIII.

Generally abundant on heaths.

G. MULINELLA. $6\frac{1}{2}'''$. F.-w. greyish ochreous, darker towards the inner margin, with a *dark fuscous streak* running obliquely *from the base of the inner margin to the tip of the costa*; *in this streak beyond the middle is a darker spot*. VII, VIII.

Larva dull whitish green; head, 2nd seg. and spots black. In flowers of furze and broom. IV, V.

Bi. !! Brs. !! Ca. Da. K. L.D. ! M. ! Ne. Sc. !! Y. !

G. DIVISELLA. $7\frac{1}{2}'''$. F.-w. pale ochreous towards the costa, pale fuscous towards the inner margin, *the division of the colour forming nearly a straight line from the middle of the*

base to the tip ; a dark fuscous dot lies on the fold before the middle, and one on the disk beyond the middle. VI.

The fens near Cambridge,

G. PALUSTRELLA. $8\frac{1}{4}'''$. F.-w. pale greyish *ochreous*, streaked with dark fuscous ; the streaks towards the tip most strongly marked, sometimes confluent ; two black spots on the disk. VII.

The fens near Cambridge.

G. SORORCULELLA. $7'''$. F.-w. greyish fuscous ; on the fold before the middle is an elongate black dot ; a longitudinal black line on the disk is interrupted before the middle by a whitish ocellus, and beyond the middle by a whitish spot ; the pale fascia is angulated and slightly indented. VII.

Larva in shoots of willow. V, VI.

Bi. !! Ca. ! Lw. M.

G. CUNEATELLA. $7\frac{1}{2}'''$. F.-w. greyish fuscous, with several longitudinal, darker, wedge-shaped streaks ; the pale fascia is whitish, angulated, and curves outwardly towards the fold. IX.

Larva on willows. VII.

York and Hackney.

G. PELIELLA. $7'''$. F.-w. dark greyish fuscous ; the usual three black spots are nearly surrounded with whitish scales ; towards the base is an additional spot ; the pale fascia forms two distinct whitish spots, that on the inner margin the posterior. VI, VII.

M. and West Wickham.

G. ALACELLA. $6\frac{1}{2}'''$. F.-w. blackish, with a bluish tinge ; the three spots are black, edged with pale yellowish ; the pale fascia forms two distinct pale yellowish spots, that on the costa the posterior. VII.

Larva greyish white ; head and 2nd seg. black. On lichen on fruit trees. VI.

Leatherhead.

G. LONGICORNIS. $7\frac{1}{2}'''$. F.-w. pale whitish grey, clouded with reddish, with an oblique streak from the base of the costa ; a cloudy fascia before the middle, a less distinct one beyond the

middle, and a *blotch on the hind-margin* darker; the three spots *elongate*, blackish. V, VI.

Bi. L.D.! M. Ne.! Sc. Y.! Richmond, Yorkshire.

G. DIFFINIS. $7\frac{1}{2}'''$. F.-w. reddish brown, with *an oblique darker streak from the costa near the base, which meets a tuft of dark scales on the fold*; in the middle are other small tufts; the pale fascia is angulated; hind-margin and tip of the costa spotted alternately with pale and dark fuscous. V, VI.

Larva brownish green, marbled with reddish; head and 2nd seg. yellowish brown. In a burrow near the root of *Rumex acetosella*. IV.

Bi.! Brs. Ca. L.D.! M.! Sc.! Dartford Heath, &c.

G. TERRELLA. $7\frac{1}{2}'''$. F.-w. ochreous-brown or brown, with the three dots black; pale fascia angulated, rather indistinct. VI, VII.

Abundant everywhere.

G. DESERTELLA. $6'''$. F.-w. *pale* ochreous-brown, with three spots black, and an additional spot on the fold near the base; pale fascia *hardly perceptible*; hind-margin and tip of costa dotted with fuscous. VI, VII.

Bi.!! Da.! Sc. Y. Probably on all coast sand-hills.

G. POLITELLA. $6\frac{1}{2}'''$ — $7\frac{1}{2}'''$. F.-w. *shining olivaceous-grey*; the three spots fuscous, rather indistinct; hind-margin and tip of the costa dotted with fuscous (the ♀ is paler and has the spots blacker). VI.

Bi. Skiddaw and near Edinburgh, on the Pentlands.

G. ACUMINATELLA. $6\frac{1}{2}'''$. F.-w. pale brown, *much clouded with darker*; the three spots black, the first of those on the disk *often divided into two*; pale fascia angulated, rather indistinct (in the ♀ f.-w. are rather pointed). V, VIII.

Larva yellowish grey, posteriorly with a reddish tinge; head pale brown. Mines the leaves of thistles. VII, IX.

Brs. Da.! Sc.!! Mickleham, Dawlish, &c.

G. ARTEMISIELLA. $5'''$ — $5\frac{1}{2}'''$. F.-w. reddish brown, *with the inner margin paler*; the three spots are black, and a fourth lies on the fold before the middle; hind-margin and tip of the costa dotted with black. VII.

Larva greenish, with dark greyish dorsal and subdorsal lines; head brown; spots small, black. Between united terminal leaves of thyme. VI.

Al. Bi.!! Brs.!! M.! Sc.!! Epsom, Dawlish Warren.

G. SENECTELLA. $5\frac{1}{2}'''$. F.-w. pale greyish ochreous, *much clouded with fuscous*; the three spots black; pale fascia very indistinct; *face pale ochreous*. VII.

Brs.!! Sc. Lewisham and Dartford Heath.

G. MUNDELLA. $5'''$. F.-w. pale yellowish grey, sometimes much clouded with fuscous, *with six black spots*; two additional ones at the base, and one on the fold beyond the middle. V, VI.

Bi.!! Ne. Dawlish Warren, and Redcar.

G. SIMILIS. $6'''$. F.-w. *dark brownish*; the three spots blackish; pale fascia angulated, not very distinct, most so towards the costa. VII.

Ca. M. Stoa's Nest, Charlton, and Mickleham.

G. AFFINIS. $5\frac{1}{2}'''$. F.-w. fuscous; the spots black, a fourth towards the base, *all followed by whitish scales*; the pale fascia forms two whitish spots, that on the inner margin rather posterior. VII.

Larva pinkish, paler on each side of the dorsal line; head black; 2nd seg. with two black blotches; spots minute, blackish. On moss on old walls. XII—IV.

Bi.!! Brs.!! Ca. Da. M.! Lewisham.

G. BOREELLA. $6\frac{1}{2}'''$. F.-w. shining greyish fuscous; the three spots black, followed by some *yellowish scales*; the pale fascia yellowish, slightly angulated and *somewhat indented*. VI, VII.

Dunoon and Sutherlandshire.

G. GALBANELLA. $7\frac{1}{2}'''$. F.-w. yellowish grey; the three spots black, followed by some yellowish scales; the pale fascia

slightly angulated, rather indistinct, *and not indented*; hind-margin and tip of the costa dotted with blackish. VII.

Rannoch, in Perthshire.

G. BASALTINELLA. $5\frac{1}{2}'''$ F.-w. *fuscous*; the spots black; an additional spot on the fold near the base; *the space between the spots paler than the rest of the wings*; the pale fascia *not angulated*, forms two nearly opposite spots. VI, VII.

Ca. Addington.

G. DOMESTICA. $6'''$. F.-w. *greyish ochreous*, more or less dusted with fuscous; the spots black; an additional spot near the base; the spot on the fold almost under that on the disk; the pale fascia *distinctly angulated*. VII, VIII.

Larva reddish brown, paler on each side of the dorsal line; head and 2nd seg. brown-black; spots distinct, black. In moss on old walls. III, IV.

Bi.!! Brs.!! Ca. K. Lw.!! M.! Ne. Sc. Tn.! Y.!

G. RHOMBELLA. $6\frac{1}{2}'''$. F.-w. *ashy grey*, with a *long black spot at the base of the costa*; the two spots on the disk black, that on the fold rarely perceptible; pale fascia angulated, preceded by a darker cloud and a blackish spot on the costa. VII.

Larva in turned-down leaves of apple. V, VI.

K. Lw. M. Sc. Y. Hammersmith.

G. PROXIMELLA. $8'''$. F.-w. *whitish grey*, with *numerous small black streaks and spots*, more or less clouded with darker grey; pale fascia angulated, rather distinct. V, VI.

Larva pale green; head yellowish; spots black. In turned-down leaves of birch. IX, X.

Bi. Brs. Ca.! Da.! K. L.D.! Lw.! M.! Ne.! Pm.! Sc.!! Tn.!! Y.!

G. NOTATELLA. $6\frac{1}{2}'''$ — $7'''$. F.-w. grey, much suffused with darker, with several small black spots; pale fascia angulated. (A very indistinct and obscure-looking insect). VI.

Larva pale greenish grey; head black; 2nd seg. black behind. Between united leaves of willow. IX.

Bi. Brs. Ca.! Da.! M. Pm. Sc.!! Y.

G. HUMERALIS. $6\frac{1}{4}'''$. F.-w. rather narrow, of variable colour, from yellowish white to dark brown; *a black streak at the base of the costa*; the three spots fuscous (sometimes included in a large dark blotch on the inner margin). VII, VIII.

Worthing and New Forest.

G. VULGELLA. $6'''$. F.-w. grey, with darker clouds on the costa; spots black, *raised*, edged with whitish; *a blackish blotch at the anal angle*; pale fascia angulated, not very distinct. VI, VII.

Larva greenish grey; head yellowish brown; 2nd seg. with two black blotches behind; spots small and black. Between united leaves of hawthorn. IV, V.

Bi. !! Brs. !! Ca. ! K. ! Lw. ! M. Pm. ! Sc. ! Y. !

G. LUCULELLA. $6'''$. F.-w. black, with *a large curved pale yellow blotch before the middle of the costa*, tinged with rosy at its lower edge; the pale fascia forms 2 whitish spots, that on the costa the more distinct. V, VI.



Larva pale greenish; spots black. In decayed wood. II, III.

Brs. Ca. K. ! M. ! Pm. ! Tn.

G. SCRIPTELLA. $6\frac{1}{2}'''$. F.-w. *white*; a short black streak on the costa at the base; a large dark grey cloud on the inner margin begins near the base, and reaches beyond the middle; the three spots are elongate, black, edged with whitish; the pale fascia angulated, preceded by a black spot on the costa. V, VI.

Larva greenish white; subdorsal lines grey; head pale brown; spots black. In turned-down leaves of maple. VIII, IX.

Brs. Ca. K Pm. ! Y. Lewisham !

G. FUGITIVELLA. $6'''$. F.-w. grey, much clouded with dark fuscous, with an oblique black streak from the costa near the base; the spots raised, black; pale fascia angulated. VI, VII.

Larva on elm, maple, nut. V.

Bi. Brs. !! Ca. Da. ! K. Ne. Pm. ! Sc.

G. *ÆTHIOPS*. 8''' . F.-w. *black, with several tufts of black scales* ; pale fascia scarcely indicated. VI.

L.D. ! M. Ne. ! Sc. ! Y. !

G. *SOLUTELLA*. 9½''' . F.-w. dull brown ; the spots blackish ; pale fascia angulated, but very indistinct (sometimes the costal half of the wing is whitish grey, varied with brownish, and the pale fascia is also whitish grey, thus giving the insect a very marbled appearance). V.

Rannoch, in Perthshire ; and Lizard, Cornwall.

G. *DISTINCTELLA*. 7½''' . F.-w. *dark brownish*, with an oblique darker blotch on the base of the costa ; spots black, *generally preceded and followed by some whitish scales* ; pale fascia *slightly angulated*, rather indistinct ; hind-margin and tip of costa dotted with blackish. VII, VIII.

Near Croydon, and Isle of Portland.

G. *CELERELLA*. 5'''—6½''' . F.-w. *greyish fuscous*, with a short oblique darker streak from the costa near the base ; *a triangular dark blotch on the costa in the middle* ; spots black, generally preceded and followed by some whitish scales ; pale fascia *nearly straight*, forms two opposite spots. IX.

On the sand hills of the Cheshire coast, and at Dawlish Warren.

G. *COSTELLA*. 6½''' . F.-w. *reddish ochreous* (sometimes much clouded with fuscous), *with a large black blotch on the costa*, beginning before the middle, and reaching to the pale fascia, which is angulated and followed by a dark cloud. VIII, IX.

Larva greenish grey ; head and 2nd seg. blackish brown. In leaves, stems and berries of *Solanum dulcamara*. VII, VIII.

Brs. Ca. K. ! Pm. ! Lewisham.

G. *MACULEA*. 5½''' . F.-w. *whitish*, clouded with pale grey ; *an oblique black streak from the costa before the middle* reaches

to the fold ; beyond it are two black dots on the disk ; pale fascia slightly angulated *and indented*. VII.

Larva greenish yellow ; head and 2nd seg. black ; spots minute, blackish. In shoots and seeds of *Stellaria Holostea*. V, VI.

Bi. Brs. Da. ! K. M. Sc. !! Tn. Y. and Lewisham !

G. TRICOLORELLA. 6''' . F.-w. pale reddish brown, with a short *yellowish white streak* from the costa near the base, *followed by a large black costal blotch*, reaching to the fold and to the pale fascia ; this fascia forms two yellowish white spots, of which *that on the costa is the larger and posterior*. VII.

Larva pale greenish yellow, with five pinkish stripes ; head black. In leaves and shoots of *Stellaria Holostea*. I—IV.

Bi. ! Brs. Da. ! M. ! Ne. Sc. !! Tn. ! Y. Lewisham !

G. FRATERNELLA. 5'''—5½''' . F.-w. reddish brown, *suffused with fuscous*, with a darker spot near the base ; a dark blotch obliquely from the costa before the middle, reaching to the fold, and a dark blotch on the inner margin beyond the middle ; the pale fascia formed of two *nearly equal* whitish spots, that on the costa *rather posterior*. VII.

Larva dull brown, with a faint greenish tinge ; head black. In shoots of *Stellaria uliginosa* and *Cerastium vulgatum*. III—V.

Bi. Da. M. Sc. !! Lewisham !

G. VISCARIELLA. 5''' . Very similar to the preceding, but darker, and the spots forming the pale fascia are more slender. VI.

Larva dull green, with a faint rosy tinge ; head black ; 2nd seg. reddish grey, with two black plates. In shoots of *Lychnis*. V.

Sc. !! and Edinburgh.

G. MACULIFERELLA. 5''' . F.-w. greyish fuscous, with a broad oblique black streak from the costa before the middle, reaching to the fold, *united on the inside with a black spot on the fold, on the outside with a black spot on the disk* ; beyond the middle is a black spot on the disk, connected with a short

transverse dark streak ; the pale fascia is slightly angulated, interrupted, and pale ochreous. VII.

Brs. Ca. K. Worthing.

G. JUNCTELLA. $4\frac{1}{2}'''$. F.-w. *whitish grey, clouded with reddish brown* towards the costa ; before the middle is a black costal streak, reaching to the fold ; beyond the middle is a black spot on the disk, followed by a reddish brown blotch ; the pale fascia is *yellowish white and slightly curved*. VIII.

L.D. ! M. Y. Epping and Hainault Forests.

G. VICINELLA. $6'''$. F.-w. dark fuscous, with an oblique black blotch before the middle of the costa, and a black blotch on the disk beyond the middle ; *a large yellowish white blotch* runs along the inner margin ; *near the base it is broad, almost touching the costa* ; the pale fascia forms two broad whitish spots, that on the costa rather posterior. VIII, IX.

Belfast and Brighton.

G. LEUCOMELANELLA. $6'''$. F.-w. black, with some scattered whitish scales ; near the base is *an oblique whitish fascia*, broadest on the inner margin ; and near the middle of the disk is an indistinct whitish cloud ; the pale fascia forms two distinct whitish spots, that on the costa the larger and posterior. VI.

Larva green ; head black ; 2nd seg. reddish brown, with two black spots above. In the shoots of *Silene maritima*. V.

The Lizard, Cornwall.

G. HUBNERI. $6'''$. F.-w. *whitish grey, with a slight rosy tint, with a black spot on the costa near the base, and obliquely beyond it a black spot on the fold* ; on the disk are two black dots ; the second is connected with a short black transverse streak above the fold ; the pale fascia is whitish, slightly angulated and *rather indented*. VII, VIII.

M. Chesterfield.

G. MARMOREA. $5\frac{1}{2}'''$. F.-w. rather narrow, reddish brown, clouded with fuscous ; the inner margin paler, with two whitish spots above the fold, each preceded by a dark fuscous

spot; the pale fascia is whitish, *nearly straight and rather oblique*, sometimes interrupted. VI—IX.

Bi.!! Redcar sand hills, and Dawlish Warren.

G. OCELLATELLA. 6'''. F.-w. dark grey, *much dusted with ochreous*, especially along the inner margin; the three spots are black, edged with ochreous; the third spot is often divided into two; the pale fascia is ochreous, angulated, intersected by a dark grey streak. VI.

Larva pale greyish white, with four dull reddish interrupted lines along the back; head pale yellowish brown. On the flowers of *Beta maritima*. V, VI.

The Lizard, Cornwall.

G. INSTABILELLA. 7'''. F.-w. reddish ochreous, with a short oblique dark streak from the costa before the middle; on the fold are three black spots; on the disk are generally two pairs of black spots; sometimes a dark streak runs along the centre of the wing, and renders these spots indistinct; the pale fascia is angulated, but very indistinct. VII, VIII.

Larva pale yellowish brown; dorsal line greenish; head and 2nd seg. black. Mines the leaves of *Plantago maritima*. IV, V.

Sc.!! Brighton; Dublin; St. Osyth; and the Lizard, Cornwall.

G. ATRIPLICELLA. 7'''. Very similar to the preceding, but greyer and darker. VII, VIII.

Larva on *Atriplex* and *Chenopodium*. V—VII.

Brs. Sc.

G. OBSOLETELLA. 6'''. F.-w. *pale greyish ochreous*, clouded with pale fuscous; the three spots are dark fuscous; the third is sometimes divided into two; the pale fascia is angulated and rather indistinct; *basal half of the abdomen pale ochreous*. VIII.

Larva in stems of *Atriplex* and *Chenopodium*. V—VII.

Isle of Portland.

G. LITTORELLA. 5½'''. F.-w. whitish, slightly clouded with pale fuscous, with a *yellowish streak on the fold, and one*

on the disk beyond the middle; on each of these streaks are two black dots. V.

Bi. ! Isle of Wight.

G. SEQUAX. 6''' . F.-w. fuscous, with an oblique pale grey fascia before the middle, edged with black internally; the usual pale fascia is rather indistinct and nearly straight, and is intersected by a black streak running towards the tip of the wing. VII, VIII.

Larva dull greenish; head and 2nd seg. yellowish brown. In shoots of *Helianthemum vulgare*. V, VI.

Al. ! Brs. !! Ne. Sc.; near Croydon; near Edinburgh; and Richmond, Yorkshire.

G. ALEELLA. 6''' . F.-w. snowy white, with black markings, namely, an oblique black fascia near the base, a costal blotch in the middle and a dot below it on the fold, two marginal spots beyond the middle and a black dot between them; tip of the wing clouded with black. V, VI.

K. and West Wickham.

G. LEUCATELLA. $6\frac{1}{2}$ ''' . F.-w. blackish, with a broad oblique white fascia before the middle, attenuated towards the costa; the usual pale fascia forms two white spots. VI, VII.

Larva pale brown, with a faint rosy tinge; head and 2nd seg. black. Between united leaves of hawthorn, apple and mountain ash. V, VI.

Brs. !! Ca. K. Sc. Lewisham.

G. ALBICEPS. 5''' — $5\frac{1}{2}$ ''' . F.-w. greyish black, with an oblique fascia before the middle; a white spot on the middle of the costa; the usual pale fascia forms two opposite white spots, connected by a slender angulated line. VIII.

Brs. ! K. ! Pm. Lewisham.



G. NANELLA. $5\frac{1}{2}'''$. F.-w. greyish, clouded with fuscous, with several blackish markings; an oblique black streak from the costa near the base is edged externally with whitish; beyond are two black spots on the costa, and an interrupted black streak on the disk; the pale fascia is much angulated, whitish and slender. VII.

Larva in the flowers of pears. V.

Brs. ! K. ! Pm.

G. MOUFFETELLA. $8'''$. F.-w. grey, sometimes with a rosy tinge; *two black dots before the middle and two beyond the middle*; sometimes there are a few additional black dots towards the base. VI, VII.

Larva black, with a white stripe above the legs; the anterior segs. with a white blotch in the middle of the back. On honeysuckle. V.

Bi. Brs. Ca. K. M. Ne. Pm. Y. Lewisham.

G. DODECELLA. $6\frac{1}{2}'''$. F.-w. grey, with four indistinct darker fasciæ; along the fold are three distinct raised black spots, and above them on the disk are three others. VI, VII.

Larva in the shoots of the Scotch fir. V.

Brs. Lw. ! M. ! Pm. Sc. ! Y.

G. TRIPARELLA. $6\frac{1}{2}'''$. F.-w. dingy ochreous, clouded with darker, with three pairs of black dots. V, VI.

Larva dull yellowish green; head pale brown; spots black. Between united oak leaves. VIII, IX.

Ca. ! M. Y. Worthing and Lewisham !

G. TENEBRELLA. $5\frac{1}{2}'''$. F.-w. unicolorous, bronzy green, with more or less of a purple tint; antennæ *entirely blackish*. VI.

Bi. Brs. Da. L.D. ! M. ! Pm. ! Sc. !! Y.

G. TENEBROSELLA. $5'''$. Like the preceding, but *tip of the antennæ white*. VI, VII.

Brs. M. ! Charlton.

G. LIGULELLA. $6'''$. F.-w. black, scarcely paler at the base; beyond the middle is a slender white fascia, placed rather

obliquely ; on the under side this appears only *as a small spot on the costa.* VI, VII.

Al. ! Bi. Brs. Lw. !! Pm. ! Sc. Y.

G. VORTICELLA. $5\frac{1}{2}'''$. Very similar to the preceding, but smaller ; the fascia straighter. VI.

Pm. ! and Epping.

G. TÆNIOLELLA. $5\frac{1}{2}'''$. F.-w. black, *towards the base paler*, with a nearly straight whitish fascia beyond the middle ; on the under side this fascia *is distinct throughout, and is even continued as a whitish spot on the h.-w.* VII.

Larva pale yellowish, with a broad red band on each seg. from 3rd to 12th, those on the 3rd and 4th segs. rather interrupted. Between united leaves of *Lotus corniculatus* and other *Leguminosæ*. V, VI.

Al. ! Brs. !! Ca. Da. K. Lw. !! M. Pm. ! Sc. !! Y.

G. SIRCOMELLA. $4\frac{1}{2}'''$. F.-w. dark greyish fuscous, posteriorly shading into black, *with a black spot on the fold before the middle.* VI.

Brs. Sc. and Crewe.

G. IMMACULATELLA. $5'''$. F.-w. shining, unicolorous, fuscous-black (with a violet tinge when alive) ; on the middle of the fold is an indistinct dark dot, and another beyond it on the disk. VIII.

Once at West Wickham.

G. NIGRITELLA. $6'''$. F.-w. rather narrow, blackish, with two very faint yellowish opposite spots beyond the middle ; in the centre of the fold is a linear yellowish dot ; *antennæ entirely fuscous.* VI.

Locality unknown.

G. CORONILLELLA. $5\frac{1}{2}'''$. F.-w. fuscous-black, posteriorly darker ; beyond the middle are two small whitish opposite spots, of which that on the costa is slightly the larger and posterior ; h.-w. *unusually broad* ; antennæ whitish, *annulated with black.* VI, VII.

Larva greenish, spotted with reddish, most distinctly so

posteriorly; head pale ochreous-brown. Between united leaves of *Coronilla varia*. V.

The hilly field near Mickleham.

G. ANTHYLLIDELLA. $5\frac{1}{2}'''$. F.-w. black, with a minute yellow dot on the middle of the fold; beyond the middle are two opposite yellow spots, that on the inner margin is very indistinct. V, VIII.

Larva blackish; head and 2nd seg. black; incisions of 2nd and 3rd, and 3rd and 4th, segs. whitish, and a faint whitish dorsal line on those segs. Between united leaves of clover, *Anthyllis*, &c. IV, VII.

Al. ! Bi. !! Brs. !! Ca. ! Da. M. ! Sc. !!

G. ALBIPALPELLA. $5'''$. F.-w. black; beyond the middle are two small whitish opposite spots, almost forming a straight fascia. VII.

Larva dull reddish; dorsal line green, between the segs. whitish green; head yellowish brown. Between united leaves of *Genista anglica*. VI.

Woking, Guildford, and near York.

G. ATRELLA. $5'''$ — $5\frac{1}{2}'''$. F.-w. shining dark fuscous, with two yellowish spots beyond the middle, one on the inner margin, and one beyond it on the costa. III.

Brs. ! Da. Lw. !

G. BIFRACTELLA. $4\frac{1}{2}'''$ — $5\frac{1}{2}'''$. F.-w. brown; the pale fascia slender, yellowish orange and twice angulated; head and palpi orange. VI, VIII.

Larva white; head pale brown. In seeds of *Conyza squarrosa* and *Inula dysenterica*. X—III.

Brs. Mickleham !!

G. SUFFUSELLA. $6'''$. F.-w. whitish ochreous, posteriorly darker, with a small black spot on the costa beyond the middle, and another beyond it on the disk, both slightly raised. VI.

The Cambridgeshire fens.

G. LUCIDELLA. $6\frac{1}{2}'''$. F.-w. dark ochreous, clouded with brown, excepting an oblong patch above the anal angle; at the hinder end of this patch is a blackish spot. VII.

Ca. Y. Hammersmith marshes.

G. LUTULENTELLA. 8''' . F.-w. unicolorous, ochreous-brown, with a small darker spot on the disk above the anal angle ; h.-w. whitish, with dark ochreous fringes. VII.

Ham Common, Dartford Heath, and near Bristol.

G. ARUNDINETELLA. $4\frac{1}{2}$ '''—5''' . F.-w. pointed, dull greyish brown, with two very indistinct pale opposite spots obliquely placed beyond the middle, that on the costa rather posterior ; between them is a minute blackish dot on the disk ; and beyond the pale spot is a blackish spot on the costa. VI, VII.

Larva attenuated, yellowish white ; head black. Mines the leaves of *Carex riparia*. III, IV.

Ca. and Hackney.

G. CEREALELLA. $6\frac{1}{2}$ ''' . F.-w. narrow, pointed, dull ochreous, posteriorly a little darker, with some indistinct fuscous spots on the fold. V, VI.

Larva in grains of barley and wheat. X—III.

Bi.!! and Glasgow.

G. NIGRICOSTELLA. 5''' . F.-w. yellow, tinged with orange along the fold and on the disk ; *the costa to beyond the middle is blackish* ; two spots on the inner margin and the tip of the wing are of the same colour. VI.

Larva green ; head and 2nd seg. yellowish green ; spots black. Between united leaves of lucerne. IX.

In the Cambridgeshire fens.

G. GEMMELLA. $5\frac{1}{2}$ ''' . F.-w. whitish, *with an oblique blackish fascia a little beyond the middle* ; several irregular dark fuscous spots lie on the costa and inner margin. VII, VIII.

Bi. ! Brs. M. !

G. NÆVIFERELLA. 4'''— $4\frac{1}{2}$ ''' . F.-w. shining, *dark bronzy grey*, with a small dark yellow spot on the fold beyond the middle, and beyond it two pale *yellowish marginal spots*, that on the costa the larger and posterior. V, VIII.

Larva yellowish white ; dorsal line dark brown ; a lateral

line reddish; head and 2nd seg. blackish. In leaves of *Atriplex* and *Chenopodium*. VI, X.

Al. Brs. Ca. K. L.D. M. ! Pm. Sc. !! Y.

G. HERMANNELLA. 4''' — 4½'''. F.-w. reddish orange, with the base black; an oblique silvery fascia before the middle, followed by three longitudinal silvery streaks; hind-margin black. V, VIII.

Larva yellowish white, dotted with reddish; head pale brown. In leaves of *Atriplex* and *Chenopodium*. VI, X.

Bi. Ca. K. Sc. Redcar.

G. PICTELLA. 5'''. F.-w. shining dark brown, with two oblique silvery streaks from the costa; an oblique silvery fascia beyond the middle, and some silvery spots on the hind-margin. V, VIII.

Redcar !! Southend, in Essex; and Barnes Common.

G. BRIZELLA. 5½'''. F.-w. yellowish grey, with several silvery oblique streaks from the costa; a black dot on the fold, and one beyond it on the disk, followed by a slightly angulated silvery white fascia. V, VIII.

Larva yellowish brown; head and 2nd seg. black. In flower stems of *Statice armeria*. X.

Southend, in Essex; Brighton and near Dawlish.

G. ERICINELLA. 6'''. F.-w. reddish brown, darker towards the costa, with two oblique streaks from the costa before the middle; a straight one in the middle, and two opposite spots beyond the middle silvery green; hind-margin spotted with yellowish silvery. VII.

Larva ochreous-brown; subdorsal lines dark brown; a pale yellowish line above the legs; head pale brown; 2nd seg. pale brown, darker behind. On heath. VI.

Ca. ! Lw. !! M. West Wickham.

G. SUBDECURTELLA. 6'''. F.-w. bluish grey towards the costa, ochreous towards the inner margin, with two short oblique dark streaks before the middle, and a straight one beyond the middle; two black dots on the disk, followed by a rather silvery fascia. VI.

Ca.

G. PAUPELLA. $5\frac{1}{4}'''$. F.-w. white, with a yellowish streak along the costa, another along the fold, and another along the hind-margin. VIII, IX.

Larva pale amber; head pale brown; 2nd seg. with two dark brown spots above. In flower heads of *Inula dysenterica*. VII, VIII.

Lw. Folkstone, and near Lewisham.

G. INOPELLA. $4\frac{1}{4}'''$ — $5'''$. F.-w. whitish, with several slender ochreous streaks along the disk, and a broader transverse one before the hind-margin. VI, VII.

Larva in flower heads of *Inula*. X, XI.

Lw. Pm. Folkstone, and near Bristol.

G. SUBOCELLEA. $5'''$ — $5\frac{1}{4}'''$. F.-w. white, with the inner margin greyish brown; on the disk beyond the middle are two elongate dark spots; towards the hind-margin are two oblique opposite dark lines; an apical black dot is followed by two dark lines in the whitish fringes. VII.

Larva whitish; head and 2nd seg. brown. In a case formed of flowers of marjorum. IX—XI.

Al. Brs. ! Pm. Sc. !! Mickleham !!

Genus 8. PARASIA.

Imago : labial palpi of moderate length, reflexed; the second joint long, with appressed scales; terminal joint short, with appressed scales, *the extreme tip only being smooth and pointed*; fore-wings elongate; hind-wings trapezoidal, *deeply emarginate below the tip*, with long fringes.

Larva in the heads of Composite plants.

We have four species in this genus, which may be thus distinguished :—

A. F.-w. with three black dots.

B. F.-w. with some of the veins grey; hind-margin not dark. *P. Lappella*.

BB. F.-w. with all the veins grey; hind-margin dark. *P. Metzneriella*.

AA. F.-w. with no black dots.

C F.-w. with some of the veins greyish. *P. Carlinella*.
 CC. F.-w. with all the veins cinnamon-brown. *P. neuropterella*.

P. LAPPELLA. 8''' . F.-w. ochreous, clouded with brownish grey, and with some of the veins grey ; on the disk are three black dots. VI, VII.

Larva white ; head dark brown, the hind lobes showing through the back of the 2nd seg. In seeds of burdock. X—II.

Bi. !! Brs. Ca. K. ! Ne. Sc Y.

P. METZNERIELLA. 7''' . F.-w. narrow, pale ochreous, suffused with brownish along the costa and hind-margin ; all the veins grey, and three black dots on the disk. VII, VIII.

Larva yellowish white ; head dark brown ; 2nd seg. dark brown above. Below the seeds of *Centaurea nigra*. X—II.

Al. Da. ! Lw. M. ! Sc. !! Charlton and Mickleham.

P. CARLINELLA. 6'''—6½''' . F.-w. pale ochreous, clouded with fulvous along the costa and hind-margin ; the pale ground-colour forms an oblique fascia beyond the middle ; many of the veins indicated by greyish scales. VII, VIII.

Larva dull whitish ; head black ; 2nd seg. blackish above. Below the seeds of *Carlina vulgaris*. X—II.

Brs. !! Da. Lw. !! Y. Folkstone and Mickleham.

P. NEUROPTERELLA, 8½''' . F.-w. ochreous, clouded with cinnamon-brown along the costa and towards the hind-margin, and with all the veins distinctly cinnamon-brown. VII, VIII.

Deal and Mickleham.

Genus 9. CLEODORA.

Imago : labial palpi moderately long ; the second joint beneath like a brush, the hairs much prolonged anteriorly ; terminal joint slender, pointed, reflexed ; wings elongate, with long fringes ; hind-wings deeply emarginate before the tip.

C. STRIATELLA. 5'''—6''' . F.-w. grey, with a slender white streak along the fold, enclosing a black dot ; above it is a less

distinct white streak, enclosing another black dot; from the costa before the tip are three short oblique white streaks. VIII.

Larva in the stem of the tansy. VI.

Ca. Brighton and Lewisham.

C. CYTISELLA. $5\frac{1}{2}$ ''' . F.-w. *yellowish*, more or less brownish towards the costa, with two oblique opposite whitish streaks beyond the middle. VII.

Brs. !! Lw. M. Ne. Pm. Dartford Heath.

Genus 10. CHELARIA.

Imago: labial palpi long, reflexed; the second joint beneath prolonged *into a tuft*; terminal joint *with appressed scales*, but smooth and pointed towards the tip; hind-wings *slightly indented* before the tip.

C. HUBNERELLA. $7\frac{1}{2}$ '''— $8\frac{1}{2}$ ''' . F.-w. pale grey, with a triangular black spot in the middle of the costa, and a short black dash in the tip of the wing. IX, X.

Brs. !! Ca. Da. !! K. L.D. M. Sc. !! Y. and Newcastle (in July).



Genus 11. ANARSIA.

Imago: labial palpi of moderate length; second joint beneath with a tuft of scales, prolonged in front; terminal joint of the male very short (*concealed in the long scales of the second joint*), of the female smooth, pointed and ascending; hind-wings trapezoidal, slightly indented before the tip.

A. SPARTIELLA. 7''' . F.-w. *pale grey*, clouded with darker, with several short oblique dark streaks from the costa, and some short streaks placed longitudinally on the disk. VII.

Larva dull dark brown; head and 2nd seg. black. In terminal shoots of broom and furze. VI.

Al. Pm. Sc. Wimbledon Common !!

A. GENISTÆ. 7'''. Very similar to the preceding, but much darker, the f.-w. being *very dark grey*. VII.

Larva in the shoots of *Genista tinctoria* and broom. VI.

Al. Pm.

Genus 12. YPSOLOPHUS.

Imago: labial palpi with the second joint beneath formed like a brush, with the hairs produced in front; *terminal joint smooth, pointed, recurved*; wings elongate, with moderate fringes.

Y. JUNIPERELLUS. $8\frac{1}{2}$ '''—9'''. F.-w. *grey*, clouded with fuscous, with four black dots; beyond the middle is a fuscous transverse blotch, followed by a *serrated* pale grey fascia. VII.

Larva on juniper. V.

Perthshire.

Y. FASCIELLUS. 10'''. F.-w. *pale reddish fuscous*, with the inner margin broadly clouded with fuscous; on the disk are three indistinct dark spots; beyond the middle is a fuscous angulated fascia. V.

Larva pale yellowish grey; dorsal and subdorsal lines greener; head reddish ochreous; 2nd seg. pale ochreous, with black spots behind. On sloe. IX.

Ca. Lw.

Y. MARGINELLUS. $7\frac{1}{2}$ '''. F.-w. bright ochreous-fuscous, with a white streak along the costa, and another along the inner margin. VII, VIII.

Larva greyish above, ochreous on the sides; dorsal and subdorsal lines reddish brown; head reddish brown; 2nd seg. with a brown-black blotch behind. On juniper. V, VI.

Ne. Sanderstead.

Genus 13. APLOTA.

Imago: palpi as in *Anarsia*; antennæ slightly pubescent; fore-wings oblong-elongate, very slightly retuse below the tip; hind-wings elongate-ovate.

A. PALPELLA. 6''' . F.-w. fuscous, dusted with yellowish, with three blackish dots, two on the disk, and one between them on the fold. VIII.

Ripley, and Hainault Forest.

Genus 14. NOTHRIS.

Imago: palpi as in *Ypsolophus*; fore-wings elongate; the tip not produced, and the fringes not adorned with markings.

N. VERBASCELLA. 10''' . F.-w. *pale ochreous*, with a few scattered dark scales; a small black dot on the fold before the middle, and one or two black dots on the disk beyond the middle; hind-margin dotted with blackish. VII.

Larva dull brown; head and 2nd seg. black. In leaves of *Verbascum*. V.

Near Norwich.

N. DURDHAMELLA. 7½''' . F.-w. *yellowish ochreous*, with a black dot on the fold before the middle, and a black dot on the disk beyond the middle, followed by a brownish cloud, in which is a slender twice-arched *pale fascia*; hind-margin edged with blackish at the tip. VII.

Larva black in front, yellowish white behind, with brown dorsal and subdorsal lines. In rolled-up leaves of marjoram. VI.

Al. Brs. Teignmouth, Darenth Wood, and Deal.

Genus 15. SOPHRONIA.

Imago: palpi as in *Ypsolophus*; fore-wings elongate, the tip produced and the fringes adorned with markings; hind-wings trapezoidal, very slightly retuse before the tip.

S. PARENTHESSELLA. 8''' . F.-w. greyish brown, streaked with whitish posteriorly; a narrow white streak along the costa to the middle, three black dots on the disk, and a black dot at the extreme tip. VI, VII.

Al. M. !! Mickleham! West Wickham.

S. HUMERELLA. 5'''. F.-w. bright fuscous, with a white streak along the costa from the base, *deflexed from the costa a little before the middle, and terminating on the disk a little beyond the middle*; beyond the middle of the costa are three white streaks, the first of which almost meets a white streak from the anal angle; at the extreme tip is a black dot. VI.

Larva dull green; dorsal and subdorsal lines darker; head brown; 2nd seg. yellowish green, with four dark dots. Between united leaves of *Artemisia campestris*. V.

Locality unknown.

Genus 16. PLEUROTA.

Imago: labial palpi straight, rather long, compressed; the second joint extremely hairy, slender at the base; terminal joint slender, smooth, pointed, short; wings elongate, acute; hind-wings slightly sinuated towards the anal angle.

P. BICOSTELLA. 10'''—11'''. F.-w. white, much dusted with greyish fuscous, especially towards the inner margin; *a dark fuscous streak near the costa runs from the base to the apex*; beneath it are two black dots on the disk. V e—VII.

Bi.!! Ca. L.D. Lw.! M.!! Ne.! Pm.! Sc.!! Y. and Richmond, Yorkshire.

Genus 17. HARPELLA.

Imago: labial palpi long, compressed; second joint slightly curved, with appressed scales; terminal joint slender, ascending, pointed; fore-wings oblong; hind-wings oblong-ovate.



H. GEOFFRELLA. 9½'''. F.-w. yellow, clouded with brown beyond the middle; two leaden-blue streaks arise from the base; one near the costa is deflected before the middle, and terminates on the inner margin; in the middle is a short bluish streak from the costa; beyond are two pale yellow triangular marginal spots,

that on the costa the posterior; the apical portion of the wing is streaked with black. V e, VI.

Brs. !! K. !! Lw. ! M. Sc. !! Tn. !!

H. BRACTEELLA. 8''' . F.w. bright yellow at the base, from before the middle dark brown; on the costa is a short dark blue streak at the base, and a yellow spot towards the tip; in the dark portion of the wing are some transverse bluish streaks. VI.

Larva dull grey; head pale brown; 2nd seg. with two black-brown plates above. In decayed wood. II—IV.

Near Gateshead.

Genus 18. HYPERCALLIA.

Imago: antennæ ciliated in the male; labial palpi long, compressed, with appressed scales; second joint very long, slightly curved, of equal width throughout; terminal joint slender, straight, pointed; wings broad, with moderately long fringes; fore-wings acute; hind-wings trapezoidal.

H. CHRISTIERNANA. 8½''' . F.-w. pale yellow, delicately chequered with scarlet. VI e, VII b.

Larva greenish grey; dorsal line whitish; spots black, placed in whitish rings; head and 2nd seg. pale greenish grey, speckled with black. On *Polygala (chamæbuxus)*. V.

Darenth Wood, Greenhithe, Sevenoaks, and Castle Eden Dene.

Family 7. ŒCOPHORIDÆ.

Imago: head smooth, obtuse, sometimes retracted; maxillary palpi undeveloped; labial palpi smooth, reflexed, generally short; fore-wings elongate, rarely oblong; hind-wings lanceolate or elongate, not indented, with long fringes.

Larva with sixteen legs; feeding in decayed wood or on leaves of plants.

This family is with us of comparatively small extent; only thirty-two British species being known, more than half of

which belong to the genus *Æcophora*. Many of these are gaily-coloured insects, but they are comparatively sluggish, and we rarely see them on the wing. Most of these insects seem to pass the winter in the larva state; some enter the pupa state early in the spring, and make their appearance in the perfect state in May, or even earlier, and indeed the whole family are in the perfect state in May, June or July. A great number of the species seem very generally distributed and tolerably common; only a few are scarce, and one large and conspicuous species, *Æcophora Woodiella*, is almost unique.

The 7 genera comprised in this family may be thus tabulated:—

- A. Antennæ thickened with scales towards the base. 1. DASYCERA.
- AA. Antennæ not thickened with scales towards the base.
 - B. H.-w. with a transparent patch at the base. 4. ENDROSIS.
 - BB. H.-w. with no transparent patch at the base.
 - C. H.-w. not acutely pointed.
 - D. Antennæ rather thick. 3. ÆGOCONIA.
 - DD. Antennæ slender. 2. ÆCOPHORA.
 - CC. H.-w. acutely pointed; body thick.
 - E. F.-w. reddish orange, with gold spots. 7. PANCALIA.
 - EE. F.-w. unicolorous grey or bronze, or with white spots and marks.
 - F. Wings elongate. 5. BUTALIS.
 - FF. Wings oblong. 6. ATEMELIA.

Genus 1. DASYCERA.

Imago: antennæ towards the base thickened with hairy scales on the back at the base, the tip comparatively naked; labial palpi reflexed, hardly as long as the thorax; terminal joint slender, pointed; fore-wings elongate; hind-wings ovate, with obtuse anal angle.

D. SULPHURELLA. $7\frac{1}{2}'''$. F.-w brownish, dusted with yellow, with two yellow streaks from the base; a triangular pale yellow spot on the inner margin beyond the middle, and a smaller yellow spot beyond it on the costa; h.-w. *pale yellow*, with the tip brownish. IV e, V.

Larva greyish white; spots blackish; head and 2nd seg. reddish brown. In decayed wood. XII—III.

Bi.!! Brs.!! Ca.!! Da.!! K.!! L.D. Lw.! M.!! Ne.!! Pm.! Sc.!! Tn.!! Y.!

D. OLIVIELLA. $8'''$. F.-w. black, with a pale yellow spot at the base near the inner margin, followed by a violet transverse line; in the middle is an oblique pale yellow fascia, broadest in the inner margin, followed by another violet transverse line. VI e, VIII b.

K. Lw. Pm. Tn.



Genus 2. ŒCOPHORA.

Imago: antennæ slender, ciliated in the male; labial palpi reflexed, hardly as long as the thorax; wings oblong or elongate.

The 17 British species of this genus may be thus tabulated:—

A. F.-w. black or dark fuscous.

B. F.-w. with two yellow spots. *Œ. minutella* and *flavimaculella*.

BB. F.-w. with three yellowish spots. *Œ. tripuncta* and *similella*.

BBB. F.-w. with yellowish fasciæ. *Œ. augustella*.

AA. F.-w. dark orange with black marks on the margins. *Œ. Woodiella* and *grandis*.

AAA. F.-w. pale orange.

C. F.-w. with oblique marginal white streaks. *Œ. formosella*.

CC. F.-w. with a black spot at the anal angle. *Œ. lunaris* and *Lambdella*.

AAAA. F.-w. ochreous or fuscous.

D. F.-w. with black spots on the disk. *Æ. subaquilea*,
flavifrontella, *fuscescens* and *pseudo-spretella*.

DD. F.-w. unspotted. *Æ. Panzerella*, *tinctella* and
unitella.

Æ. MINUTELLA. $5\frac{1}{2}'''$. F.-w. fuscous, with a conspicuous transverse yellow spot upon the inner margin *beyond* the middle, and a smaller yellow spot beyond it *on the costa*. V, VI.

Larva dull whitish; head pale brown; 2nd seg. pale amber. On seeds. III.

Brs. !! Ca. !! K. ! L.D. M. ! Pm. Sc. Y. !

Æ. FLAVIMACULELLA. $5'''$. F.-w. dark fuscous, with two pale yellow spots, one *on the middle* of the inner margin, one *on the disc* beyond the middle. VI, VII.

Larva dull ochreous; head and 2nd seg. blackish brown. In seeds of *Angelica sylvestris*. IX, X.

Brs. Da. L.D. M. ! Ne. Pm. Sc. !! Y. ! and near Edinburgh.

Æ. TRIPUNCTA. $6'''$. F.-w. blackish, with *two* yellowish white spots *on the costa*, one in the middle, and one towards the tip; intermediate between them is a *third spot on the fold*. V, VI.

Brs. ! Ca. ! K. Lw. M. ! Pm. ! Tn.

Æ. SIMILELLA. $6\frac{1}{2}'''$. F.-w. dark fuscous dusted with sulphur, and with three sulphur spots; *one on the fold near the base*, one on the inner margin beyond the middle, and one on the costa towards the tip; head pale yellow, *with a fuscous streak in the middle*. V, VI.

Larva under the bark of dead fir trees. IX.

L.D. M. Y. and Rannoch, Perthshire.

Æ. AUGUSTELLA. $5'''-5\frac{1}{2}'''$. F.-w. blackish, with two pale yellow fasciæ, the first near the base, broadest on the inner margin, the second in the middle attenuated on the fold; beyond it are two pale yellow marginal spots. VI.

Brs. Hyde Park.

Æ. WOODIELLA. $6\frac{1}{4}'''$. F.-w. bright orange, paler towards the inner margin with five dark brown spots, namely, two at the base, a slender one on the costa beyond the middle, an oblong one on the middle of the inner margin, and a larger one along the hind margin. VI.

Formerly on Kersall Moor, near Manchester.

Æ. GRANDIS. $6\frac{1}{4}'''$. F.-w. deep yellow; a black blotch at the base extending *along the costa nearly to the middle*; beneath it is a transverse bluish line; in the middle are three longitudinal bluish lines; beyond the middle are two pale yellow marginal spots, that on the costa the posterior; hind margin brownish. V e, VI.

Bewdley Forest and North Wales.

Æ. FORMOSELLA. $6'''$. F.-w. yellow, with a yellowish brown blotch on the inner margin near the base, and a larger oblique yellowish brown blotch from the middle of the costa; *both delicately edged with whitish*; towards the tip is a small yellowish brown blotch on the costa. VII.

Wanstead.

Æ. LUNARIS. $5'''$. F.-w. pale yellow, with the costa and inner margin narrowly and the hind margin broadly deep yellow; at the anal angle is *a triangular black spot with its apex produced*. VII, VIII.

Brs. Ca. K. Lw. Pm. ! Lewisham.

Æ. LAMBDELLA. $7\frac{1}{4}'''$. Very similar to the preceding, but larger, and the triangular black spot on the inner margin not placed so far towards the anal angle. VI, VII.

Brs. Charlton.

Æ. SUBAQUILEA. $6'''$. F.-w. pale ochreous, clouded with fuscous, palest along the fold, with two blackish spots in the middle and *three transversely placed beyond the middle*. V, VI.

Bi. ! L.D. ! M. Y.

Æ. PANZERELLA. $7\frac{1}{2}'''$. F.-w. unspotted, pale ochreous, clouded with fuscous; h.-w. greyish fuscous; palpi *short, pale* ochreous. VI, VII.

Ca. K. Lw.

Æ. TINCTELLA. $7'''$. F.-w. pale ochreous, rather clouded with fuscous, especially towards the tip; h.-w. *dark* greyish fuscous; palpi *long*, pale ochreous; head and *thorax* *pale* ochreous. V, VI.

Ca. Lw.! Pm.! West Wickham.

Æ. UNITELLA. $6\frac{1}{2}'''$. F.-w. unicolorous, golden-brown; h.-w. *dark fuscous, almost black*; palpi *long*, bright ochreous; *terminal joint brown, head deep yellow; thorax brown.* VIII.

Larva dull dark brown, dorsal and subdorsal lines whitish; head reddish brown; 2nd seg. pale brown above. In dead sticks. IV.

Brs. K. Lw.! Pm.

Æ. FLAVIFRONTILLA. $10'''$. F.-w. shining greyish fuscous, with three indistinct darker spots, two before and one beyond the middle; *head yellow.* VI.

Ca. K. Lw.! Pm.

Æ. FUSCESCENS. $5'''$. F.-w. ochreous, almost entirely suffused with fuscous, with three dark fuscous spots, two before and one beyond the middle. VII, VIII.

Al. Brs.! Ca.!! K.!! L.D.! Lw. M.!! Pm. Sc.!! Tn. Y. Lewisham.

Æ. PSEUDO-SPRETELLA. $9'''$ — $10'''$. Very similar to the preceding but much larger; the central portion of the wing more distinctly paler, and the hind wings paler. VII, VIII.

Larva yellowish white; head reddish brown; 2nd seg. pale ochreous. On dried peas, &c. I—III.

Al. Bi.!! Brs.!! Ca.!! Da.!! K.! L.D.! Lw.! M.!! Ne.!! Pm. Sc.!! Y. London and Liverpool.

Genus 3. *EGOCONIA*,

Imago: head rather rough behind; antennæ rather thick; wings elongate; hind-wings with distinct anal angle, with no transparent patch at the base.

Æ. QUADRIPUNCTA. $6\frac{1}{2}'''$. F.-w. dark fuscous, with an oblique yellowish blotch on the costa near the base, a sinuous yellow fascia in the middle, and two opposite yellow spots beyond the middle, of which that on the costa is the larger; *h.-w. whitish.* VII, VIII.

Brs. ! and near London in houses.

Genus 4. *ENDROSIS*.

Imago: head quite smooth; antennæ slender; wings elongate; hind-wings with distinct anal angle, with a transparent patch at the base.

E. FENESTRELLA. $7\frac{1}{2}'''$ — $9'''$. F.-w. dirty-grey, clouded with fuscous, and with some obscure darker markings; *the extreme base white; head and thorax snowy white.* I—XII.

Larva dull whitish; head reddish brown; 2nd seg. pale brown behind. On a variety of waste substances. I—XII.



Everywhere abundant in houses.

Genus 5. *BUTALIS*.

Imago: head obtuse, *retracted*; antennæ in the male slightly ciliated; palpi rather short, ascending, pointed; wings elongate; hind-wings acuminate; in repose the wings are almost folded round the short thick body, meeting behind it nearly in a point.

Larva partly gregarious, forming webs.

B. GRANDIPENNIS. $7\frac{1}{2}'''$ — $8\frac{1}{2}'''$. F.-w. *greenish brown*, posteriorly with a few whitish scales. V, VI.

Larva dark olive-green; dorsal line paler; subdorsal lines darker; spots black; head brownish. On furze. I—III.

Bi.!! Brs.!! M.!! Pm. Torrington!! Wimbledon Common!

B. FUSCO-ÆNEA. 7'''. F.-w. *bronzy green*, posteriorly a little darker. VI.

Brs. Ca.! K. L.D.! Mickleham; Richmond, Yorkshire.

B. SENESCENS. 5½'''. F.-w. *dark, greenish brown*, with numerous scattered whitish scales, especially towards the tip. VII.

Larva dull olive-green, with several longitudinal whitish lines; spots small, blackish; head brownish black. On thyme. V.

Al. L.D.! Lw. M. Sc.!! Y. Mickleham.

B. FUSCO-CUPREA. 4½'''. Very like the preceding, but darker, and with no white scales. Perhaps not truly distinct. VII.

Brs.!! L.D. Lw.

B. CICADELLA. 5½'''. F.-w. fuscous, with a slight olive tint, with numerous scattered whitish scales, forming a spot on the inner margin near the base, another on the inner margin in the middle, and frequently a short streak towards the tip; generally there is a white or yellowish streak along the fold. VII.

Once at Brandon, Suffolk.

B. VARIELLA. 5'''. F.-w. blackish, with a few scattered white scales; a white spot on the fold beyond the middle, and another at the anal angle. VI.

Dorsetshire and Hampshire, in sand pits.

B. CHENOPODIELLA. 7'''. F.-w. shining, dark fuscous, with three yellowish spots near the inner margin—one before the middle, united to a yellowish streak at the base along the fold, another nearly in the middle, and a third beyond it near the anal angle. VI—IX.

Larva dull greenish grey, with several darker wavy longitudinal lines; head greyish, speckled with black; 2nd seg.

with a large black spot on each side. On *Chenopodium* and *Atriplex*. IV—VIII.

K. Y.

B. INCONGRUELLA. 5'''. F.-w. rather glossy, fuscous; h.-w. pale grey. III, IV.

L.D. M. Sc. ! and Wimbledon Common.

Genus 6. ATEMELIA.

Imago: head obtuse; palpi short, drooping, not pointed; wings oblong.

A. TORQUATELLA. 5'''. F.-w. dark fuscous, with three pale yellowish spots, one on the fold before the middle, one at the anal angle, and one beyond it on the costa. VI, VII.

Larva dull dark red, marbled with whitish; head pale brown; 2nd seg. with two large black spots behind. In birch and elm leaves. VIII, IX.

Torwood, Kilmun, Airthrey, The Trossachs, and Dunkeld.

Genus 7. PANCALIA.

Imago: head retracted, in front obtuse; palpi reflexed; 2nd joint smooth; terminal joint pointed; wings elongate.

P. LATREILLELLA. 6'''. F.-w. deep orange, edged with dark fuscous, with six golden green spots, three on the costa, two on the fold and one on the inner margin; the third costal spot is whiter than the others; antennæ of the ♂ entirely dark fuscous; of the ♀ with a broad white ring before the tip. VI.

Lw. Pm. Epping, and near Edinburgh.

P. LEUWENHOEKELLA. 5½''' Very like the preceding, but smaller, and the antennæ have a white ring in both sexes. V, VI.

Al. ! Brs. !! Ca. ! K. L.D. Lw. Pm. Y. ! Richmond, Yorkshire.

Family VIII. GLYPHIPTERYGIDÆ.

Imago : head generally smooth ; maxillary palpi very short, rarely perceptible ; fore-wings oblong or elongate ; hind-wings ovate or lanceolate. Flight diurnal.

Larva with sixteen legs, or apodal.

This is a family of comparatively small extent, comprising only twenty-two British species, which are divided amongst eight genera. Several of these insects are gaily coloured, and delight to fly in the hot sunshine. The species of the genus *Glyphipteryx* have a peculiar habit of slightly raising and then depressing their wings, as though fanning themselves ; and *G. Thrasonella*, which is generally abundant amongst rushes, may be often observed thus employed in the months of June and July. Most of these insects appear in the perfect state in the summer months, making their appearance in May, June or July ; but some of the genus *Acrolepia* emerge from the pupa state much later in the year,—in September or October,—and then hibernate, to appear on the wing on bright sunny days in the spring. Most of these insects are common, though, from their small size, may be easily overlooked ; two, however, are rarities with us—*Acrolepia betuletella* and *Roslerstammia Pronubella*.

Genus 1. ACROLEPIA.

Imago : the crown and back of the head rough, the remainder smooth ; labial palpi arched, rather thick ; terminal joint pointed ; fore-wings generally elongate ; hind-wings ovate, lanceolate.

Larva with sixteen legs, mining in leaves.

Pupa in an open net-work cocoon.

A. PERLEPIDELLA. 5'''. F.-w. orange, much suffused with black, with a pale yellow fascia before the middle; beyond the middle are some small pale yellow spots on the costa and inner margin; *head ferruginous*. VI.

Brs. Darenth Wood.

A. GRANITELLA. 6'''. F.-w. marbled *with grey, white and fuscous*, with a more conspicuous dark fuscous spot on the inner margin before the middle, with a whitish spot on each side of it. VII—IX.

Larva pale yellowish green; dorsal line darker. In leaves of *Inula dysenterica*. VI, VII.

Brs. Ca. Da. Lw. Sc.!! Worthing and Chudleigh!!

A. PYGMÆANA. 5½'''. F.-w. marbled *with pale brown and whitish*, with a rather conspicuous triangular *whitish* spot on the middle of the inner margin; on the costa is a *blackish blotch*; a short black streak lies on the disk near the tip. VIII—X, IV h.

Larva pale whitish green; head brownish. In leaves of *Solanum dulcamara*. VII—X.

K. Lewisham!!

A. BETULETELLA. 5'''. F.-w. *brown, mottled indistinctly with dark brown*; on the costa are *two dark brown spots*, one before and one beyond the middle; on the inner margin before the middle is a conspicuous *white triangle*. VIII.

Castle Eden Dene.

Genus 2. ROSLERSTAMMIA.

Imago: the crown and back of the head rough; antennæ rather thick, longer than the body; labial palpi rather short, drooping; terminal joint pointed; wings oblong; hind-wings ovate.

R. ERXLEBELLA. 6¼'''. F.-w. bright coppery, rather paler towards the inner margin; *h.-w. violet-fuscous*; head yellow. V e, VI.

Brs. ! Pm. Worthing.

R. PRONUBELLA. $6\frac{1}{4}'''$. F.-w. shining golden green; the costa beyond the middle pale yellowish; h.-w. *pale yellowish*, with all the margins dark fuscous; head yellow. V.
Once taken in Sutherlandshire, in 1854.

Genus 3. GLYPHIPTERYX.

Imago: head smooth; antennæ slender, shorter than the body; labial palpi arched, rather thick; beneath with bristly hairs; fore-wings oblong or elongate; hind-wings ovate or lanceolate.

Larva with sixteen legs; mining leaves, or feeding on seeds.

G. FUSCOVIRIDELLA. $6'''-6\frac{1}{4}'''$. F.-w. shining bronzy green, with *the extreme costa beyond the middle white*. V, VI.
Al.!! Bi.!! Brs.!! Ca.!! Da.! K.!! L.D. Lw.! M.! Ne.!! Pm.!! Sc.!! Tn.!! Y.!

G. CLADIELLA. $6'''-6\frac{1}{4}'''$. F.-w. dark bronzy green, *with no silvery streaks*, with some black scales at the anal angle and tip of the wing. VI.

Wicken Fen, near Cambridge.

G. THRASONELLA. $6'''-6\frac{1}{4}'''$. F.-w. dark bronzy green, with *five bluish silvery streaks* from the costa, and a fainter streak from the inner margin; at the anal angle is a black blotch, *enclosing three silvery violet dots*; at the tip of the wing are some blackish scales. VI, VII.

Bi.!! Brs. Ca.!! Da.! L.D. M.! Ne.!! Sc.!! Y.

G. HAWORTHANA. $6'''$. F.-w. dark bronzy green, with a conspicuous curved white streak on the middle of the inner margin; beyond are five white streaks from the costa, and one from the inner margin, all with their tips silvery; above the anal angle are three silvery dots; at the tip of the wing are a few black scales. V, VII.



Larva dull ochreous; head dark brown, 2nd seg. brownish ochreous. On the seeds of *Eriophorum*. IV, VI.

L.D. M.! Sc.!! Y.

G. *EQUITELLA*. $4\frac{1}{2}'''$. Resembles the preceding, but *smaller and darker, and the first costal streak placed more obliquely and nearer the base*; at the tip of the wing is a round black spot. VI e, VII b.

Larva pale yellow; head and 2nd seg. black. In leaves and shoots of *Sedum acre*. V.

Brs. L.D. Y. and near London!

G. *OCULATELLA*. $4\frac{1}{2}'''$. Resembles the preceding in size, but the dorsal streak is *less curved*; the first costal streak is *further from the base, and the apical black spot has a silvery pupil*. VI.

Pm. ! Tn.

G. *SCHENICOLELLA*. $4\frac{1}{2}'''$. Resembles the two preceding, but the f.-w. are *much narrower, and the first dorsal streak is much more slender*; the apical black spot has *no silvery pupil*. V e.

Larva in seed-heads of *Schænus nigricans*.

At the Lizard, in Cornwall.

G. *FISCHERIELLA*. $3\frac{1}{2}'''$ — $4'''$. Resembles the three preceding, but *smaller and darker, and the wings narrower, and the first dorsal streak of the f.-w. is much more slender, indistinct, and obliquely placed than in those species*. V—VII.

Bi. !! Brs. !! Ca. Da. !! K. L.D. Lw. ! M. Ne. !! Pm. !! Sc. !! Tn. Y. !

Genus 4. *ÆCHMIA*.

Imago: head smooth; antennæ rather thick; labial palpi short, drooping, filiform; terminal joint pointed; fore-wings rather broad, with a projecting tooth of scales on the inner margin.

Æ. DENTELLA. $4\frac{1}{2}'''$. F.-w. dark fuscous, irrorated with whitish, with two indistinct pale spots on the inner margin, one before and one beyond the middle; on the middle of the inner margin is a projecting tooth of dark fuscous scales. V, VI.

Ca. ! Sanderstead and Chudleigh.

Genus 5. PERITTIA.

Imago: head smooth; *antennæ slender*; labial palpi moderately long, slender, drooping, pointed; fore-wings elongate; hind-wings lanceolate.

Larva with 16 legs; mining in leaves.

P. OBSCUREPUNCTELLA. $4\frac{1}{4}'''$. F.-w. shining greyish fuscous, with two indistinct dark spots, one in the middle on the fold, one on the disk beyond the middle. V.

Larva greenish grey, with darker dorsal line; head dark brown; 2nd seg. blackish above. In leaves of honeysuckle. VII.

L.D. Lw. Pm. Tn. Y. Lewisham!

Genus 6. ANTISPILA.

Imago: head smooth; *antennæ scarcely as long as the body*; labial palpi short, thick, drooping; fore-wings ovate-lanceolate; hind-wings lanceolate.

Larva entirely without feet; mining in leaves, and then cutting out an oval flat case.

A. PFEIFFERELLA. $4\frac{1}{4}'''$. F.-w. glossy golden brown, towards the hind-margin rather coppery; before the middle is a slender, angulated, bright golden fascia; beyond the middle are two triangular golden spots, that on the costa rather posterior. V.



Larva pale greyish green; head and 2nd seg. pale brown. In leaves of dogwood. VI, VII.

Al. ! Bi. Brs. ! K. Lw. Pm. Sc. ! Lewisham.

A. TREITSCHKIELLA. $3'''$. Very like the preceding, only much smaller; the f.-w. darker, and the fascia less angulated. VI.

Larva greyish white; head and 2nd seg. black; the other segs. have each a black spot beneath. In leaves of dogwood. VIII, IX.

Brs. ! Sc. ! Lewisham.

Genus 7. TINAGMA.

Imago: head smooth; *antennæ short, thick*; labial palpi short, filiform, pointed, drooping; fore-wings *with the fringes expanded posteriorly*; hind-wings lanceolate.

Larva as in the preceding genus.

T. SERICIELLUM. $3\frac{1}{4}'''$. F.-w. shining bronzy grey, with a small *whitish* spot on the inner margin near the base, and a *larger one on the inner margin beyond the middle*. V.

Bi. ! Brs. K. L.D. Lw. !! M. ! Pm. ! Sc. !! Y.

T. STANNEELLUM. $2\frac{1}{2}'''$ — $3'''$. F.-w. shining *pale* bronzy grey, with a *faint whitish* spot on the inner margin beyond the middle. V.

Brs. L.D. Lw. M.

T. RESPLENDELLUM. $2\frac{1}{2}'''$ — $3'''$. F.-w. shining, *very dark* bronzy grey, with a small *white* spot on the inner margin near the base, and a *larger white spot on the inner margin beyond the middle*. VI.

Larva yellowish green; dorsal line dark green; head brown; 2nd seg. purplish brown. In leaves of alder. VII, VIII.

Brs. Da. L.D. M. Pm. Sc. !! Tn. West Wickham and Beckenham.

Genus 8. DOUGLASIA.

Imago: head smooth; *antennæ rather thick*; labial palpi rather drooping, the tip blunt; fore-wings elongate; hind-wings acuminate.

D. OCNEROSTOMELLA. $3\frac{1}{2}'''$ — $4'''$. F.-w. shining grey, with an obsolete paler spot beyond the middle of the inner margin. VII.

Brandon, in Suffolk; and Mickleham !!

Family IX. ARGYRESTHIDÆ.

Imago : head rough ; the face smooth ; no maxillary palpi ; labial palpi rather short, the terminal joint blunt or slightly pointed ; fore-wings elongate ; hind-wings lanceolate, with long fringes.

Larva with 16 legs ; in leaves, shoots, or fruits of plants.

In this family we have only twenty-eight British species, which are very unequally divided amongst four genera ; the genus *Argyresthia* comprising twenty-two species, thus leaving only six to be divided amongst the other three genera. By far the greater number of the species are regular summer insects, appearing in the perfect state between the months of May and August ; the species of the genus *Zelleria* appear, however, later in the season, and, hibernating, are also met with in the spring. One species, *Ocnerostoma piniariella*, is double-brooded, appearing in the perfect state in May and July. The insects of the genus *Argyresthia* are distinguished by their position in repose, as the hind pair of legs are laid alongside the body, which is elevated at a considerable angle, the insect's head being almost in contact with the substance on which it rests. Many of the species are excessively abundant, but the species of the genus *Zelleria* have never been too common ; *Cedestis Gysselinella* is still scarce, and *Argyresthia literella* is a great rarity.

The four genera of this family may be distinguished as follows, by the form of the fore-wings and the structure of the palpi :—

A. F.-w. not subfalcate.

B. Palpi rather short, smooth ; terminal joint rather pointed.

Genus 1. ARGYRESTHIA.

BB. Palpi shorter, thicker and hairy. Genus 2. CEDESTIS.

BBB. Palpi extremely short. Genus 3. OCNEROSTOMA.

AA. F.-w. subfalcate. Genus 4. ZELLERIA.

Genus 1. ARGYRESTHIA.

Imago: head rough, the face smooth; antennæ shorter than the fore-wings; labial palpi drooping or slightly porrected, with appressed scales; terminal joint rather pointed; fore-wings elongate; hind-wings lanceolate.

E. EPHIPPELLA. $5\frac{1}{2}'''$. F.-w. ochreous-brown; the inner margin white, interrupted beyond the middle by a dark brown spot, which can be traced across the wing as a rather oblique fascia, *terminating on the costa*. VI, VII.

Larva in the shoots of cherry. IV.

Bi. Brs. Da.!! L.D. Lw. M. Pm.! Sc. Y.!

A. NITIDELLA. $5\frac{1}{2}'''$. F.-w. very pale ochreous-brown, with a darker streak from the base; the inner margin is white, interrupted beyond the middle by a curved dark brown fascia, *which terminates in the tip of the wing* (sometimes f.-w. cream-colour, with the inner margin white). VI, VII.

Larva yellowish green; head brown; 2nd seg. brownish above. In shoots of hawthorn. V.

Bi.!! Brs.!! Ca.!! Da.!! K.! L.D. Lw.!! M. Ne.!! Pm.! Sc.!! Tn.! Y.!

A. SEMITESTACELLA. $6'''-6\frac{1}{2}'''$. F.-w. ochreous, with the inner margin white to the middle, where there is a dark ochreous spot. VIII, IX.

Bi.! Da.! L.D. M. Ne. Pm.! Sc.! Y.!

A. SPINIELLA. $6'''-6\frac{1}{2}'''$. F.-w. yellowish brown, with the inner margin white, interrupted beyond the middle by a dark fuscous spot, which can sometimes be traced *indistinctly* across the wing as an oblique fascia; the costa dotted with white and fuscous, with two larger whitish spots before the tip. VIII, IX.

Brs. Da.! L.D. M. Pm.! Sc.!! Y.

A. ALBISTRIA. $4\frac{1}{2}'''$ — $5'''$. F.-w. dark ochreous-brown, with more or less of a purplish tinge; the inner margin *narrowly* white to the middle, there interrupted by a dark fuscous spot. VI, VII.

Larva pale green; a red band on each seg.; head and 2nd seg. black. In shoots of sloe. V.

Bi. !! Brs. !! Ca. !! Da. !! K. ! Lw. ! M. Ne. Pm. !! Sc. !! Y. !

A. CONJUGELLA. $6'''$. F.-w. purplish fuscous, with the inner margin whitish, interrupted beyond the middle by a dark fuscous spot, nearly opposite to which is a dark fuscous spot on the costa; on the costa towards the tip are two whitish spots. V—VII.



Larva dull whitish yellow; head and 2nd seg. pale brown. In berries of mountain ash. VIII.

Bi. !! L.D. M. Ne. !! Sc. !! Y. !

A. SEMIFUSCA. $6'''$. F.-w. dark brownish purple; the inner margin white, interrupted beyond the middle by a dark fuscous-purple spot, *which cannot be traced as a fascia across the wing*; on the costa before the tip are three or four white spots. VIII.

Bi. Brs. Da. ! L.D. M. Pm. ! Sc. Y. !

A. MENDICA. $5\frac{1}{2}'''$. F.-w. purplish grey; the costa at the base ochreous; the inner margin white, interrupted beyond the middle by a dark fuscous *nearly straight* fascia. V e, VI.

Larva whitish green; head and 2nd seg. black. In shoots of sloe. IV.

Bi. ! Brs. Ca. Da. ! K. ! L.D. Lw. ! M. Ne. !! Pm. Y. !

A. GLAUCINELLA. $4'''$. F.-w. greyish bronze; the inner margin whitish, broadest on the inner side of the nearly straight fascia; several *small transverse dark spots can be observed* in the pale dorsal streak. VI, VII.

Larva dull greyish white; head and 2nd seg. pale brown. In bark of oak, horse-chestnut, &c. III, IV.

Bi. ! Brs. ! L.D. M.

A. RETINELLA. 5''' . F.-w. white, with numerous fuscous transverse spots, towards the costa much suffused with pale fuscous; beyond the middle is a slightly oblique fuscous fascia, and a fuscous blotch occupies the tip of the wing. VI, VII.

Bi. ! Brs. !! L.D. Lw. ! M. Ne. !! Pm. ! Sc. !! Y. !

A. ABDOMINALIS. 4''' . F.-w. *white*, with two yellowish streaks from the base; a curved yellowish spot beyond the middle of the inner margin, and several scattered yellowish spots towards the tip of the wing. VI e, VII b.

Sanderstead and Mickleham.

A. DILECTELLA. 4½''' . F.-w. *shining pale golden*, with a *faint violet tint*; two darker streaks from the base, and some transverse dark spots beyond the middle of the wing. VII.

Larva in shoots of juniper. V.

Brs. ! L.D. Sanderstead and Mickleham.

A. ANDEREGGIELLA. 5''' . F.-w. white, with a transverse golden brown spot on the middle of the inner margin, sometimes united with a V-like golden mark, which lies towards the tip of the wing. VII, VIII.

Ne. New Forest.

A. CURVELLA. 5½''' . F.-w. *white*, reticulated with fuscous, especially along the costa, with a curved *dark fuscous* fascia beyond the middle, and a dark fuscous spot towards the tip. VI, VII.

Larva in shoots of apple. V.

Brs. !! Ca. Da. !! K. L.D. Pm. !! Sc. Tn. Y. !

A. SORBIELLA. 6''' . F.-w. *yellowish white*, towards the costa reticulated with pale golden brown; on the inner margin is a small *golden brown* spot before the middle, and beyond the middle a larger *obliquely placed spot*, frequently united with the blotch at the tip of the wing. VI, VII.

Larva in shoots of mountain ash. V.

Brs. L.D. ! M. Sc. Y. !

A. PYGMEELLA. 6½''' . F.-w. *shining greenish white*, paler along the inner margin, on which are placed three pale golden brown spots—the first perpendicular, before the middle, united

with a streak on the fold; the second oblique, beyond the middle; the third smaller, at the anal angle. VI, VII.

Larva in shoots of willow. V.

Bi.!! Brs.!! Ca.!! Da.!! K. L.D. Lw.!! M. Ne. Pm.!! Sc.!! Y.!

A. GÆDARTELLA. 6". F.-w. white, sometimes much suffused with golden, with an oblique golden fascia from the base of the costa; a golden fascia in the middle, forked towards the costa, and a golden fascia along the hind-margin, enclosing *two* small white spots. VI, VII.

Larva green, with a slender red band on each seg.; head and 2nd seg. black. In the bark of birch, alder, &c. II—IV.

Bi.!! Brs.!! Ca.!! Da.!! K. L.D. Lw.!! M.!! Ne.!! Pm.!! Sc.!! Tn. Y.!

A. LITERELLA. 5½". F.-w. whitish, with a slender golden fascia from the inner margin near the base, a furcate fascia from the middle of the inner margin, *neither reaching to the costa*, and a third fascia from the anal angle, which terminates in the tip of the wing. VI.

Darenth Wood.

A. BROCKEELLA. 5½". F.-w. white, with a shining *brown* golden fascia from the base of the costa; a golden brown fascia in the middle, forked towards the costa, united to a golden brown apical blotch, which encloses only *one white spot*; sometimes a broad white streak runs right along the inner margin. VI, VII.



Larva in shoots of birches. III, IV.

Bi.!! Brs.!! Ca.!! Da.!! K. L.D. Lw.!! M.!! Ne.!! Pm.!! Sc.!! Tn.!! Y.!

A. ARCEUTHINA. 4½". F.-w. unicolorous, shining bronzy green; head and thorax white. V.

Brs. Sanderstead and Mickleham.

A. PRÆCOCELLA. 5". F.w. shining ochreous, with a slight violet tinge; head whitish yellow. V.

Sanderstead.

A. AURULENTILLA. 4'''. F.-w. shining ochreous, with a slight violet tinge; the inner margin narrowly white; head white. VII, VIII.

Larva green, tinged with reddish posteriorly; head black; 2nd seg. greyish above. In leaves of juniper. IV.

Tn. Sanderstead and Mickleham.

Genus 2. CEDESTIS.

Differs from the preceding genus in the labial palpi being rather short, thickened and hairy. In repose the insects rest flat, and not with the tail elevated like the *Argyresthia*.

C. FARINATELLA. 5½'''. F.-w. whitish grey, dusted with fuscous, with a fuscous fascia before the middle, followed by a whitish fascia; the apical portion of the wing is almost entirely fuscous, except two whitish marginal spots. VI, VII.

Larva pale brown, greener on the back; head and 2nd seg. black. In leaves of Scotch fir. II, III.

Bi. Da. !! L.D. M. ! Pm. Sc. !! Y. !

C. GYSSELINELLA. 5½'''. F.-w. whitish grey, with a rather indistinct pale golden brown fascia near the base, and another more defined just before the middle; beyond the middle are some pale golden brown blotches. VI, VII.

Larva in a white web between leaves of Scotch fir. III.

Rannoch, in Perthshire.

Genus 3. OCNEROSTOMA.

This differs from the two preceding genera in the extremely short, hardly perceptible palpi.

O. PINIARIELLA. 5½'''. F.-w. unicolorous, shining silvery grey; head pale grey; antennæ entirely fuscous. IV, VI, VII.

Larva brown, very shining; head black; 2nd seg. with a black plate behind. In leaves of Scotch fir. III, V.

Bi. !! M. Sc. !! Tn. Y. !

Genus 4. ZELLERIA.

Imago: head rough; face smooth; antennæ shorter than the fore-wings, rather thick; labial palpi porrected or almost ascending, rather short, thickened with scales; the terminal joint *blunt*; fore-wings subfalcate; hind-wings lanceolate.

Z. HEPARIELIA. $5\frac{1}{2}$ ". F.-w. reddish ochreous, posteriorly somewhat fuscous, with the appearance of a small darker spot above the anal angle; head yellowish. VIII—X, IV h.

Sc.; Castle Eden Dene; Mickleham; Conway.

Z. INSIGNIPENNELLA. $7\frac{1}{2}$ ". Larger than the preceding, and the inner margin often paler, but perhaps not truly distinct. VIII—X, IV h.

Pm. Y. Mickleham and Dartford Heath.

Z. FASCIAPENNELLA. 8" — 9". F.-w. pale grey, clouded with dark grey, with four longitudinal rows of black dots; before the middle is an oblique, cloudy, dark fascia. IX, X.

On the Pentlands, near Edinburgh.

Family X. GRACILARIIDÆ.

Imago: head smooth or rough; antennæ as long as the fore-wings; maxillary palpi rather long, slender; labial palpi slender; terminal joint pointed; wings with long fringes; fore-wings elongate; hind-wings lanceolate.

Larva with 14 feet; mining or rolling up leaves.

This is a well-marked family, represented in this country by twenty-seven species, which are divided amongst three genera. The perfect insects may always be immediately recognized by their peculiar mode of sitting, the head being considerably raised above the surface on which they rest, thus affording a direct contrast to the position of an *Argyresthia* in repose. Many of the species are common, and generally dis-

tributed; and the beautiful *Gracilaria Syringella* is a common garden pest; three species of *Gracilaria*, however, seem to be rare with us, namely, *Stramineella*, *Ononidis* and *imperialella*. The species of the genus *Ornix* are so similar and so confusing that they can rarely be satisfactorily determined, unless the food-plant of the larva is known. Most of these insects are double-brooded, and pass the winter in the pupa state; hence many are on the wing in the first warm weather at the end of April; a few, such as *G. stigmatella*, emerge from the chrysalis at the end of autumn, and hibernated specimens of that species are not unfrequently taken by those visiting the blooming sallow bushes in spring.

The three genera of this family may be readily distinguished as follows:—

A. Head smooth.

B. Second joint of labial palpi with no projecting tuft. Genus 1. GRACILARIA.

BB. Second joint of labial palpi with a projecting tuft. Genus 2. CORISCUM.

AA. Head rough. Genus 3. ORNIX.

Genus 1. GRACILARIA.

Imago: head smooth; labial palpi slender, ascending, cylindrical; the 2nd joint with appressed scales, *not tufted*; terminal joint pointed.

Our fifteen species of this genus may be tabulated as follows:—

A. Large species.

B. F.-w. with a distinct pale triangle on the costa. *G. Swederella* and *G. stigmatella*.

BB. F.-w. with a more or less distinctly margined, but scarcely paler triangular mark on the costa. *G. stramineella*, *G. hemidactylella*, *G. falconipennella*, *G. semifascia*, *G. populetorum*, *G. elongella*.

BBB. F.-w. with no triangular mark on the costa.

C. F.-w. with numerous black dots. *G. tringipennella*.

CC. F.-w. with no black dots. *G. Syringella*.

AA. Small species.

D. F.-w. with fascia-form markings. *G. omisella*.

DD. F.-w. with pale spots on the costa and inner margin. *G. phasianipennella* and *G. auroguttella*.

DDD. F.-w. with numerous silvery spots. *G. Onoidis* and *G. imperialella*.

G. SWEDERELLA. $6\frac{1}{2}'''$. F.-w. bright reddish, with a violet gloss; a pale yellow streak along the inner margin at the base; the costal triangle is pale yellow, and reaches nearly to the tip. V, VI, VIII.

Larva greenish white, semi-transparent; head yellowish brown. In cones on oak leaves. VII, IX.

Al.! Bi.!! Brs.!! Ca.! Da.!! K.! L.D.! Lw.! M.!! Ne.!! Sc.!! Tn.!! Y.!



G. STIGMATELLA. $7'''$. F.-w. reddish brown; the costal triangle is whitish yellow, it reaches to the fold, where its apex is produced a little posteriorly. IX, X, IV h.

Larva greenish white; head yellowish brown. In cones on leaves of willow, sallow and poplar. VIII, IX.

Bi. Brs. Ca. Da. ! K. Lw. Sc. Y.

G. STRAMINEELLA. $6\frac{1}{2}'''$. F.-w. pale straw-colour, with numerous reddish brown spots, of which the two most conspicuous form the margins of the costal triangle. IX.

L.D. Y. and Torwood, Stirlingshire.

G. HEMIDACTYLELLA. 6''' . F.-w. *pale ochreous*, marbled with reddish ochreous, with a distinct costal triangle, of the pale ground-colour, not crossing the fold; on the costa are some *small fuscous spots*. IX.

Lw. Pm. Whittlebury.

G. FALCONIPENNELLA. $6\frac{1}{2}$ ''' . F.-w. *reddish brown*, with a faintly indicated paler costal triangle, and some *dark fuscous spots* along the whitish costa *and along the inner margin*. IX.

Has occurred near London, but rarely.

G. SEMIFASCIA. 5''' . F.-w. *pale yellowish*, mottled with reddish brown (or almost entirely reddish brown), *with an oblique pale yellowish streak from the costa before the middle*, reaching to the fold and deflected along it; the costa is dotted with blackish. IX, X.

Larva pale green, very transparent; dorsal vessel dark green; head pale reddish brown. In cones on maple leaves. VII.

Brs. Sc. !! Mickleham and Whittlebury.

G. POPULETORUM. $5\frac{1}{2}$ ''' . F.-w. *very pale ochreous*, with a faint purple tinge, with some fascia-form dark clouds; on the costa are several small black spots; *a larger one in the middle is conspicuous*. IX.

Larva on birch and aspen. VII.

Lw.; Worthing; Birch Wood.

G. ELONGELLA. $6\frac{1}{2}$ '''— $7\frac{1}{2}$ ''' . F.-w. *reddish ochreous*, irregularly varied with darker markings, in which may generally be traced a truncate costal triangle, hardly paler than the ground-colour; often there is a dark fuscous spot on each side of it above the fold. VI, IX.

Larva dull whitish, with dark grey dorsal vessel; head pale brown. In longitudinally-rolled alder leaves. V, VII.

Bi. Ca. Da. L.D.! Lw. M.! Ne.! Sc.!! Tn. Y.! and near Warrington!

G. TRINGIPENNELLA. $6\frac{1}{2}$ ''' . F.-w. *pale ochreous*, whitish along the costa, *with three longitudinal rows of black dots*. V, VIII.

Larva whitish green ; head black ; 2nd seg. brownish above. In leaves of plantain. III, IV ; VI, VII.

Al. Brs.!! Ca. Da.!! K. L.D.! M.! Ne.! Pm. Sc.!! Y.! Dawlish !!

G. SYRINGELLA. 6''' . F.-w. yellowish white, with the base dark fuscous, and with several brown markings, namely, a blotch on the inner margin near the base, and three oblique fasciæ. V, VII.

Larva whitish ; head brownish white. In leaves of lilac, privet and ash. VI, IX.

Al.!! Bi.!! Brs.!! Ca.! Da.!! K.!! L.D.! Lw.! M.! Ne.!! Pm.! Sc.!! Tn.!! Y.!

G. OMISELLA. 4''' . F.-w. greyish brown or ochreous, with five oblique white streaks from the costa, and two white spots on the inner margin. V, VII.



Larva whitish green (changing to orange-red when full grown) ; head yellowish brown. In leaves of *Artemisia vulgaris*. VII b, IX.

Lee !! Dartford Heath !! Woking !! and Reigate !!

G. PHASIANIPENNELLA. 5''' . F.-w. shining brown, with two whitish spots on the inner margin, and three rarely distinct on the costa (sometimes these spots are brilliantly white, but more generally the costal spots are only to be traced by their dark margins). IX, X.

Larva greyish ; head and 2nd seg. yellowish brown, each with four black spots. In rolled-up strips of leaves of *Polygonum hydropiper* and sorrel. VIII, IX.

Ca. Pm. New Forest and Isle of Wight.

G. AUROGUTTELLA. 4'''—4½''' . F.-w. dark bronzy grey, with four golden yellow spots, two on the inner margin, one near the costa before the middle, and one on the costa beyond the middle. V, VII, VIII.

Larva whitish green ; head pale brown. In cones on leaves of *Hypericum*. VI ; IX, X.

Brs. Da. ! K. L.D. Lw. M. Ne. ! Sc. !! Tn. Y. Lewisham !

G. ONONIDIS. 4'''. F.-w. dark brown, with *nine silvery spots*, one near the inner margin, three on the inner margin, four on the costa, and one on the tip of the wing. VI—VIII.

Larva yellowish green; dorsal vessel dark green; head ochreous-brown. In leaves of rest-harrow and clover. IV, V.
Ca. Pm. Mickleham.

G. IMPERIALELLA. 3½'''. F.-w. shining golden, with *four silvery streaks* from the costa, and two silvery spots on the inner margin. V.

Ca. Glanville's Wootton, Dorset.

Genus 2. CORISCIUM.

Imago: head smooth; labial palpi slender, ascending; second joint beneath, *with a tuft of hairs*; terminal joint slender, pointed.

C. BRONGNIARDELLUM. 4½'''. F.-w. greyish brown, with *four oblique whitish streaks from the costa*, edged towards the base with dark fuscous; on the inner margin are two short whitish streaks; *a black hook in the apical fringes*. VII—IX.

Larva pale whitish green; dorsal vessel dark green; head pale brown. In oak leaves. VI, VII.

Brs. ! Ca. L.D. Y. and near Guildford !!

C. CUCULIPENNELLUM. 6'''. F.-w. *pale grey* or whitish, clouded with fuscous, *with three oblique dark fuscous fasciae*. IX, X; IV h.

Larva in cones on leaves of privet. VIII.

Brs. K. L.D. Pm. Y.; Whittlebury; Dartford Heath; and Leyburn, Yorkshire.

C. SULPHURELLUM. 6'''—7'''. F.-w. *pale sulphur*, dusted with fuscous (sometimes with dark fuscous blotches). IX, X; IV h.

Lw. Sc. ! Whittlebury and New Forest.

Genus 3. ORNIX.

Imago: head *hairy above*, in front smooth; labial palpi slender, rather drooping, cylindrical; the second joint with appressed scales; terminal joint pointed; fore-wings *oblong-ovate*; hind-wings lanceolate.

We have nine species in this genus, the first eight of which are excessively similar, and can hardly ever be satisfactorily determined, unless they have been collected in the larva state and reared.

O. AVELLANELLA. 4''''. F.-w. *pale grey*, intermixed with white; along the costa are numerous short whitish streaks; two dark spots are on the fold and one on the disk; fringes whitish, with *two entire* curved dark lines from the tip to the anal angle; palpi whitish, the last joint with the base dark, and a dark ring before the tip. V, VIII.

Larva whitish green; dorsal vessel dark green; head brown; 2nd seg. with four black dots. In nut leaves. VII, IX, X.

Brs. Ca. Da.!! K. Lw.! M. Ne. Sc.!! Tn.!! Y.

O. DEVONIELLA. 4½''''. Distinguished by the *ochreous colour of the f.-w.* and the distinct *black apical spot*. V.

One taken near Dawlish, in Devonshire.

O. ANGLICELLA. 5''''. Resembles *Avellanella*, but *darker*; the terminal joint of the palpi has a broad black ring. IV e, V, VIII.

Larva in leaves of sloe and hawthorn. VIII, IX.

Bi.!! Brs.!! Ca. Da.!! K. Lw.! M. Ne.!! Pm. Sc.!! Tn. Y.

O. BETULE. 4''''. Very similar to the preceding, but the apical spot *more distinct*; in the fringes there is *only one entire dark line* from the tip to the anal angle; the second begins below the tip, *hence the tip of the apical fringes is white*. V, VIII.

Larva whitish green; dorsal vessel dark green; head brownish; 2nd seg. with four black spots. In leaves of birch. VII, IX, X.

Brs. ! M. Ne. ! Sc. ; Lewisham ; West Wickham ; Harrogate.

O. SCUTULATELLA. $4\frac{1}{2}'''$. F.-w. greyish fuscous, *irrorated with white*, having a more speckled appearance than the other species ; fringes as in *Betula* ; palpi *white, unspotted*. VI.

Lw. M. Dartford Heath.

O. TORQUILLELLA. $5'''$. F.-w. *dark grey, with a slight purple gloss* ; the costal streaks whitish, the two last white ; apical spot black ; fringes with two entire dark lines ; *palpi white, unspotted*. V, VIII.

Larva in leaves of sloe. VII, IX.

Bi. ! Da. !! Lw. Pm. Y.

O. SCOTICELLA. $5'''$. F.-w. *dark grey, irrorated with white at the base* ; costal streaks *white* ; apical spot black ; fringes with two entire dark lines ; *palpi white, unspotted* ; head whitish, *face white*. VI.

Larva in leaves of mountain ash. VIII, IX.

Bi. Brs. L.D. M. Sc. !! Y. ; Torwood, Stirlingshire ; Harrogate.

O. LOGANELLA. $4\frac{1}{2}'''$. Distinguished from all the preceding by the *blackish ground-colour of the f.-w.*, on which the costal white streaks and two white spots on the inner margin are conspicuous. VI, VII.

Larva pale dull green ; dorsal vessel dark green ; head brown ; 2nd seg. with four black spots. In leaves of birch. VIII, IX.

L.D. Sc. !! Y. and Luss, near Loch Lomond.

O. GUTTEA. $5\frac{1}{2}'''$. F.-w. dark brown, with three triangular whitish spots on the costa, alternating with two others on the inner margin. V, VI.

Larva yellowish ; dorsal vessel dark green ; head brownish black ; 2nd seg. with four small brown dots, and two larger ones. In turned-down apple leaves. VII.

Bi. ! Brs. Ca. ! Da. !! K. Lw. Pm. Sc. !! Tn. Y. !



Family XI. COLEOPHORIDÆ.

Imago: head smooth; antennæ porrected in repose; the basal joint frequently with a tuft of hair; no maxillary palpi; labial palpi slender; terminal joint pointed; wings elongate, lanceolate.

Larva with 16 feet; living in a case; mining into the interior of leaves or of seeds, usually changing to the pupa state within the case.

In this family, which only comprises two genera, we have fifty-four British species. These are very unevenly divided, as the genus *Goniodoma* only contains a single species, leaving the remaining fifty-three to the genus *Coleophora*. All these insects appear in the perfect state between the end of May and the middle of August, the majority appearing in July; they all pass the winter in the larva state, though some of them are then quite small, whereas the larvæ of other species are just full fed. The habits of the perfect insects are very retired, and many which abound in the larva state are never seen on the wing. The leaf-feeding larvæ are very easily found, the pale blotches they form in the leaves being so very conspicuous; the seed-feeding larvæ are much better concealed. The cases vary excessively in form and structure, and are often most serviceable in distinguishing closely-allied species. Many species are common and generally distributed, but a few still continue scarce with us.

Genus 1. COLEOPHORA.

It is not very easy to tabulate these numerous species; the following is an attempt:—

- A. F.-w. unicolorous, or the costa only slightly paler.
- B. F.-w. brownish ochreous, with the costa paler. *C. badiipennella* and *C. limosipennella*.
- BB. F.-w. grey, ochreous, brown or black, but not bronzy green. *C. Juncicolella*, *C. Laricella*, *C. olivaceella*, *C. solitariella*, *C. lutipennella*, *C. fuscadinella*, *C. viminetella*, *C. vitisella*, *C. siccifolia*, *C. gryphipennella*, *C. nigricella*, *C. orbitella*, *C. paripennella* and *C. albitarsella*.
- BBB. F.-w. bronzy green. *C. fuscocuprella*, *C. alcyonipennella*, *C. Frischella*, *C. deauratella* and *C. Fabriella*.
- AA. F.-w. not unicolorous.
- C. Antennæ not tufted, not thickened; f.-w. yellow, with two bronzy lines. *C. chalcogrammella*.
- CC. Antennæ not tufted, not thickened; f.-w. whitish, with a dark spot beyond the middle. *C. Hemerobiella*.
- CCC. Antennæ with a conspicuous tuft at the basal joint. *C. anatipennella*, *C. ibipennella*, *C. palliatella*, *C. currucipennella*, *C. Vulnerariæ*, *C. albicosta*, *C. pyrrhulipennella*, *C. conspicuella*, *C. Vibicella*, *C. Lixella* and *C. ochrea*.
- CCCC. Antennæ clothed towards the base with long scales; no perceptible tuft at the basal joint. *C. binotapennella* and *C. Wockeella*.
- CCCCC. Antennæ not thickened; the basal tuft short or wanting.
- D. F.-w. dark or yellowish; the costa white, and frequently one or two white lines on the disk. *C. saturatella*, *C. discordella*, *C. Genistæ* and *C. niveicostella*.
- DD. F.-w. white, with distinct yellow or brown lines. *C. Onosmella*, *C. Inflata*, *C. Therinella*, *C. Troglodytella*, *C. lineolea* and *C. apicella*.
- DDD. F.-w. whitish, with dark lines and scattered dark scales. *C. argentula* and *C. Virgaureæ*.
- DDDD. F.-w. ochreous or grey, with whitish lines and scattered dark scales. *C. squamosella*, *C. annulatella* and *C. Salinella*.

DDDDD. F.-w. grey, with faintly paler lines; no dark scales. *C. murinipennella* and *C. Cæspitiella*.

C. JUNCICOLELLA. $3\frac{1}{2}'''$. F.-w. ochreous-grey. VII.

Larva in a short case formed of small heath leaves. On heath. X—IV.

M. Sc.!! Y.

C. LARICELLA. $4'''$ — $5'''$. F.-w. greyish fuscous. VIe, VII.

Larva in a whitish cylindrical case. On leaves of larch. IX, IV.

Da.!! L.D. M. Sc. Y.

C. BADIIPENNELLA. $4\frac{1}{2}'''$. F.-w. dark greyish ochreous; the costa narrowly whitish to near the tip. VI, VII.

Larva in a short smooth case. On leaves of ash and elm. V.

Brs. Ca. K. Sc.! Y.

C. LIMOSIPENNELLA. $5'''$ — $6'''$. F.-w. dark brownish ochreous; the costa narrowly whitish to beyond the middle, yet more broadly and less sharply margined than in *Badiipennella*. V, VI.

Larva in a long case with serrated edge. On elm-leaves. VII. Mickleham; Sutton; Lewisham; Abbey Wood.

C. OLIVACEELLA. $6'''$. F.-w. olive-grey, inclining to dark grey along the inner margin; h.-w. dark grey. VI.

Chesterfield.

C. SOLITARIELLA. $5\frac{1}{2}'''$. F.-w. rather narrow, shining ochreous-yellow; fringes at the anal angle dark grey; h.-w. dark grey. VII.

Larva in a cylindrical whitish case. On leaves of *Stellaria Holostea*. X—VI.

Brs. Ca. K. Sc.!! Lewisham!!

C. LUTIPENNELLA. $6'''$. F.-w. coarsely scaled, ochreous-yellow; fringes at the anal angle pale ochreous. VI, VII.

Larva in a nearly cylindrical ochreous case. On leaves of oak and birch. V.

Bi. Brs.! Ca.! Da. K.!! L.D. Lw.!! M. Sc.! Y.

C. FUSCEDINELLA. 6'''. F.-w. brownish, more or less tinged with grey; fringes paler. VII.

Larva in a rather cylindrical brownish case. On leaves of elm, alder, &c. V, VI.

Brs.!! Ca.! Da.!! K.!! L.D. M.!! Pm.! Sc.!! Y.!

C. VIMINETELLA. 6'''. F.-w. rather narrow, greyish ochreous, darker towards the tip (but the ground-colour is very variable); *antennæ* slender. VI, VII.

Larva in a tapering case, which is dark brown at the tail end, and ochreous-grey in front. On the leaves of sallow and osier. IX, V.

Bi. Brs. Ca. Da.! K. L.D. M. Sc.!! Y.!

C. VITISELLA. 6'''. F.-w. narrow, greyish ochreous (very similar to the preceding). VI, VII.

Larva in a blackish wrinkled case. On leaves of *Vaccinium Vitis-Idæa*. XI—IV.

Moors near Manchester.

C. SICCIFOLIA. 6'''. F.-w. unicolorous grey, very glossy, sometimes with a slight ochreous tinge; *antennæ* white, with fuscous rings, *tinged with ochreous towards the base*. VI.

Larva in a case formed of a withered leaf. On hawthorn, apple and birch. VII, VIII.

Sc. Tn. Lewisham!

C. GRYPHIPENNELLA. 6'''. F.-w. rather broad, greyish ochreous, more ochreous in the ♀; *antennæ* white, with black rings. VI.

Larva in a cylindrical greyish ochreous case. On leaves of rose. IX; IV, V.

Bi.!! Brs.!! Ca. Da.! K. L.D. M.!! Ne.!! Sc.!! Tn. Y.

C. NIGRICELLA. 5'''. F.-w. unicolorous, blackish; *antennæ* white, with dark fuscous rings. VI, VII.

Larva in a nearly straight, cylindrical, brown-black case. On leaves of hawthorn, apple and sloe. V.

Al.!! Bi.!! Brs.!! Ca.!! Da.!! K.!! M.!! Ne.! Pm.! Sc. Tn.!! Y.!

C. ORBITELLA. 6'''. F.-w. shining greyish ochreous ; antennæ white, with dark fuscous rings ; *the tip entirely white ; the basal joint rather slender.* VI, VII.

M. West Wickham and Lewisham.

C. PARIPENNELLA. 5'''. F.-w. rather short and broad, brownish bronze ; antennæ dark fuscous, with the tip white ; palpi yellowish. VI.

Larva on leaves of hawthorn, rose, sloe, bramble, &c., in a case which lies flat on the leaf. VIII, IX.

Sc. ; near London, common.

C. ALBITARSELLA. 5'''—6'''. F.-w. shining violet-black ; antennæ violet-grey at the base, then white with black rings ; the tip entirely white ; legs grey ; *the tarsi white.* VI, VII.

Larva in a slender, cylindrical, slightly curved, blackish brown case. On leaves of ground ivy and marjoram. XI—IV.

Brs. !! Ca. Da. ! Sc. !! Tn. Lewisham !!

C. FUSCOCUPRELLA. 4½'''. F.-w. bronzy green ; antennæ not thickened, fuscous ; the tip white, with some fuscous rings. V, VI.

Larva in a nearly globular case. On leaves of nut. VIII, IX.

Brs.

C. ALCYONIPENNELLA. 5½'''. F.-w. shiny bronzy green ; antennæ dark bronzy green ; the tips white. VII.

Larva in a straight cylindrical blackish case, with a whitish lateral line. On leaves of *Centaurea nigra*. V, VI.

Al. ! Bi. !! Da. ! K. L.D. M. !! Ne. !! Sc. !! Y.

C. FRISCHELLA. 8'''—9'''. F.-w. *extremely shining* bronzy green, with the tip coppery ; antennæ brownish, with the tip white. VII.

Isle of Portland ; Isle of Wight ; and Charmouth, Dorsetshire.

C. DEAURATELLA. $6'''-6\frac{1}{2}'''$. F.-w. bronzy green; the tip coppery; antennæ dark fuscous, *towards the base thickened with coppery scales*; the tip white. VII.

Brs. L.D. Pm.

C. FABRICIELLA. $5\frac{1}{2}'''$. F.-w. shining bronzy green, coppery towards the tip; *antennæ thickly clothed with coppery scales to the middle, then white with black rings* VI, VII.

Al. Bi. ! Brs. Ca. Da. Sc.

C. CHALCOGRAMMELLA. $4'''-5'''$. F.-w. deep yellow, with two bronzy streaks, one along the fold and one along the disk; antennæ black, the tip white. VI, VII.

Larva in a short dull orange-brown case; feeding on the leaves of *Cerastium arvense*. IV, V.

Sc. !!

C. HEMEROBIELLA. $8'''$. F.-w. white, with numerous scattered fuscous scales, and with a conspicuous fuscous spot above the anal angle. VII.

Larva in a long, straight, cylindrical, dark brown case. On leaves of pear, plum and cherry. V.

Putney ! and Hammersmith !

C. ANATIPENNELLA. $7\frac{1}{2}'''$. F.-w. white, with numerous scattered fuscous scales, especially towards the tip; costal fringes whitish; basal joint of the antennæ with a long whitish tuft. VI, VII.

Larva in a brown-black pistol-formed case, which stands upright on the surface of the leaf. On leaves of sloe, &c. V.

Bi. !! Brs. !! Ca. ! Da. K. Lw. ! M. Ne. Sc. ! Y. !

C. IBIPENNELLA. $6'''-7'''$. F.-w. white, slightly irrorated with fuscous towards the tip, and sometimes with some faint yellowish veins; *costal fringes tinged with grey*; basal joint of antennæ with a rather short whitish tuft. VI e, VII.

Larva in a brown-black pistol-formed case, which lies nearly prostrate on the surface of the leaf. On leaves of birch. V.

Brs.; Lewisham; West Wickham.

C. PALLIATELLA. 8'''. F.-w. white, with the veins towards the tip indistinctly fuscous, and the extreme costa fuscous; basal joint of the antennæ with a long whitish tuft. VI, VII.

Larva in a brown-black pistol-formed case, with a large scaly flap on each side. On leaves of oak, saw, &c. V.

K. Lw. Pm.

C. CURRUCIPENNELLA. 7'''. F.-w. white, with the veins broadly yellowish, inclining to brown towards the tip; basal joint of the antennæ with a long ochreous tuft. VI, VII.

Larva in a brown-black pistol-formed case with several little projections along the back. On leaves of oak, saw, &c. V.

K. Tn. Epping.

C. VULNERARIÆ. 6'''. F.-w. pale yellow, with silvery white streaks along the costa, inner margin, fold and disc, and some dark fuscous scales on the edges of these streaks. VI, VII.

Near Deal.

C. ALBICOSTA. 7'''. F.-w. pale greyish ochreous, darker towards the costa, with white streaks on the costa, fold, hind-margin, and a short one on the disc; basal joint of the antennæ with a short ochreous tuft. Ve, VI.

Larva in a downy brownish ochreous case on seeds of furze. VIII.

Bi. !! Brs. !! Ca. Da. ! K. Lw. M. Ne. ! Sc. !!

C. PYRRHULIPENNELLA. 6'''. F.-w. greyish ochreous, darker towards the costa, with snowy white streaks along the costa, fold, inner and hind-margins, and a short one on the disk; basal joint of the antennæ with a grey tuft. VI, VII.

Larva in a slender, shining, black case. On heath. X—V.

Bi. !! Ca. M. Sc. !! Y. !

C. CONSPICUELLA. 9'''. F.-w. pale yellow, with the inner margin narrowly silvery, and with three silvery streaks; one on the fold, one on the disk, and one near the costa; between the last two is a brownish blotch; basal joint of the antennæ with a long whitish tuft. VI, VII.

Larva in a rather large, slightly curved, somewhat flattened brown case. On leaves of *Centaurea nigra*, &c. V, VI.

Headley Lane, near Mickleham.

C. VIBICELLA. $9\frac{1}{4}'''$. F.-w. ochreous, with three silvery streaks; one on the fold, one on the disc and one near the costa; between the two last is a brownish blotch; basal joint of the antennæ with a long ochreous tuft. VII.



Larva in a shining black, rather cylindrical case. On leaves of *Genista tinctoria*. V, VI.

Lw. and Trench Wood, Worcestershire.

C. LIXELLA. $8\frac{1}{4}'''$. F.-w. pale yellow, with a silvery streak along the fold; a short one on the disk, and five short oblique streaks towards the costa all margined with fuscous; antennæ thickened with white scales near the base; basal joint with a long yellowish white tuft. VIe, VII.

Larva in a whitish case. On leaves of grasses. IV.

Al. Brs. !! Lw. ! Sc. !! Castle Eden Dene.

C. OCHREA. $9'''$. F.-w. ochreous, with a silver streak along the fold, and another narrower on the inner margin; antennæ clothed with ochreous hairs to near the middle; basal joint with a long ochreous tuft. VII, VIII.

Larva in a large yellowish brown case. On leaves of *Helianthemum vulgare*. V.

Al. Brs. !! Sanderstead.

C. BINOTAPENNELLA. $6\frac{1}{4}'''$. F.-w. dull ochreous, with two indistinct dark spots, one in the middle of the fold, the other on the disk; antennæ thickened with ochreous scales towards the base. VIII.

Near Brighton.

C. WOCKEELLA. $10'''$. F.-w. brown; the edge of the costa white, and some of the veins faintly whitish; basal half of the antennæ clothed with long dark hairs. VIe, VII.

Larva in a dark brown rather fluffy case, slightly curved at the end. On leaves of *Betonica officinalis*. V.

Pm. and near Canterbury.

C. SATURATELLA. 7'''. F.-w. dark brownish ochreous, with a rather broad white streak along the costa, slender white streaks along the fold and inner margin, and a slender slightly angulated white streak on the disc; basal joint of the antennæ with a short grey tuft. VII.

Lw. Charlton.

C. DISCORDELLA. 6'''. Smaller and paler than the preceding, and the basal joint of the antennæ with no tuft; antennæ white with brownish rings. VI, VII.

Larva in a brownish rather curved, somewhat flounced case. On leaves of *Lotus corniculatus*. IX, X, V.

Brs. !! Da. L.D. Lw. M. Ne. !! Pm. Sc. !! Y.

C. GENISTÆ. 5½'''—6½'''. Closely resembles the preceding, but f.-w. slightly darker, and the costal white streak broader beyond the middle and continued further to the tip., VIe, VII.

Larva in a yellowish white case. On leaves of *Genista Anglica*. V, VI.

Ne. Sc. ! Y. ! Woking Common !! Reigate ! Lyndhurst ! and Wanstead !

C. NIVEICOSTELLA. 6½'''. F.-w. ochreous, darker towards the costa; a narrow white streak along the costa to the tip; antennæ entirely white. VIe, VII.

Brs. M. Y. Mickleham, Guildford, Dartford Heath.

C. ONOSMELLA. 9'''—10'''. F.-w. white, with the veins narrowly brownish ochreous; antennæ white, VII.

Larva in a thick greyish white case. On leaves of *Echium vulgare*. V, VIb.

Al. Bi. Mickleham !

C. INFLATÆ. 7½'''—8½'''. F.-w. white, with slender, neat ochreous veins and with a few scattered black scales along the fold and on the disk; antennæ white. VII.

Larva in a short cylindrical whitish case. On seeds of *Silene inflata*. VIII, IX.

Lw. Micklêham, Guildford and Loudwater.

C. THERINELLA. 7''' . F.-w. *narrow*, white, unspotted, with the veins rather broadly *ochreous*, *posteriorly confluent*; the costa narrowly white to near the tip; antennæ whitish, with pale brown rings. VI, VII.

Larva in a long whitish case. On leaves of thistles. IX.

Bi. Ca. Da.

C. TROGLODYTELLA. 7''' . F.-w. *rather broad*, silvery white, unspotted, with the veins *bright ochreous*; the costa narrowly white to near the tip; antennæ white, with brownish rings. VI, VII.

Larva in a long, nearly straight, cylindrical case, of a dingy ochreous, with a brown patch above. On leaves of *Eupatorium cannabinum* and *Inula dysenterica*. V.

Al. ! Brs. !! Ca. ! Sc. !! Tn. Y.

C. LINEOLEA 6½''' . F.-w. *rather broad*, white, with the veins *pale ochreous*, *posteriorly confluent*; the costa broadly white nearly to the middle. VI, VII.

Larva in a flattish, hairy, greyish white case. On leaves of *Ballota nigra*, &c. III—V.

Brs. !! Ca. ! K. ! Ne.

C. APICELLA. 5½''' — 6''' . F.-w. white, with a faint indication of some darker veins, especially towards the costa beyond the middle; *a fuscous streak running from the extreme tip, which is rather prolonged*. VII.

In the fens near Cambridge; not scarce.

C. ARGENTULA. 6''' . F.-w. *rather broad*, white, with the veins broadly ochreous, and with *some scattered fuscous scales*; *costal fringes beyond a whitish line dark grey*. VII.

Larva in a rather short whitish case. On the seeds of yarrow. IX, X.

Brs. ! K. Croydon and Dawlish.

C. VIRGAURÆ. 5½''' — 6½''' . Very similar to the preceding, but f.-w. narrower; the veins darker, and *the costal fringes are entirely whitish ochreous*. VIII.

; *Larva* in a small cylindrical brownish case, with some loose filaments of the seed-down attached to it. On seeds of golden-rod. IX, X.

Brs. Sc.!! Exeter! and Bideford!!

C. SQUAMOSELLA. $5\frac{1}{2}'''$ — $6\frac{1}{2}'''$. F.-w. greyish fuscous; the costa narrowly white to the middle; along the fold and towards the hind-margin are numerous irregularly-scattered whitish scales. VIII.

Near Mickleham.

C. ANNULATELLA. $7'''$. F.-w. greyish ochreous, with some scattered black and white scales between the veins; the costa narrowly whitish to beyond the middle; antennæ white with brownish rings. VII, VIII.

Larva in a short whitish grey case, covered externally with grains of sand. On seeds of *Chenopodium* and *Atriplex*. IX, X.

Bi.!! Brs.!! Da.! K. L.D. M. Ne. Sc.!! Y.

C. SALINELLA. $6'''$ — $6\frac{1}{2}'''$. Very like the preceding, but f.-w. shorter and broader, and the structure of the palpi different, the terminal joint being so remarkably short. VIII.

Seaford, near Brighton.

C. MURINIPENNELLA. $6'''$. F.-w. narrow, white, with the veins rather broadly greyish ochreous, posteriorly confluent, and much concealing the ground colour. V, VI.

Larva in a dull whitish case, inserted into the brown husk of a seed of *Luzula*. On seeds of *Luzula*. VI.

K. Lw. M.! Pm. Sc.!! Y.

C. CÆSPITITIELLA. $5\frac{1}{2}'''$. F.-w. narrow, acute, shining, greyish ochreous or greyish yellow, with the costa narrowly white to near the tip. VI.

Larva in a short whitish case. On seeds of rush. IX—V.

Abundant everywhere.

Genus 2. GONIODOMA.

G. AUROGUTTELLA. $4\frac{1}{2}$ '''. F.-w. yellow, with two silvery streaks from the base to beyond the middle ; beyond the middle are five or six pale golden spots edged with blackish ; in the apical fringes is a blackish streak. VIII.

Near Yarmouth, Isle of Wight.

Family XII. ELACHISTIDÆ.

Imago : head generally smooth ; labial palpi slender, filiform, mostly recurved and pointed ; fore-wings oblong or elongate ; hind-wings lanceolate or linear-lanceolate.

Larva with 16 feet, mostly mining in leaves.

This is a more extensive family than those we have been lately considering. In this country we have fifteen genera, comprising eighty-five species, but nearly the half of these are contained in the single genus *Elachista*. Some of the species of this family are very beautiful, exhibiting metallic and varied tints ; on the other hand, many are very dull and sombre in appearance. The perfect insects mostly fly at dusk, but sometimes they may be observed flying in little swarms in the afternoon. A few species are of very retired habits, and consequently seldom seen on the wing ; hence some of our greatest rarities have been at once rendered common on the discovery of the larva. A few species still continue rare, such as *Stathmopoda pedella*, *Cosmopteryx Lienigiella*, *Chauliodus insecurellus*, *Laverna Stephensi*, *Chrysoclista bimaculella*, *Heliodines Roesella*, *Asychna profugella* and *A. æratella*, &c., &c. Most of these insects are in the larva state in early spring, and may generally be collected during the otherwise unprofitable period of March and April. Most of the perfect insects occur between

May and August; but a few, as *Chauliodus Chærophyllellus*, appear at the end of autumn, and hibernate in the perfect state.

The fifteen genera of the family may be tabulated as follows :—

- A. H.-w. extremely narrow, almost setiform.
- B. Head rough. Genus 1. BEDELLIA.
- BB. Head smooth.
- C. Antennæ with long slender hairs. Genus 2. STATHMOPODA.
- CC. Antennæ naked.
- D. Basal joint of the antennæ long. Genus 3. COSMOPTEYX.
- DD. Basal joint of the antennæ short. Genus 6. BATRACHEDRA.
- AA. H.-w. lanceolate or linear-lanceolate.
- E. Head rough in front. Genus 5. OINOPHILA.
- EE. Head rough behind. Genus 15. TISCHERIA.
- EEE. Head smooth.
- F. F.-w. with projecting tufts on the inner margin. Genus 6. CHAULIODUS.
- FF. F.-w. with no projecting tufts on the inner margin.
- G. F.-w. with raised tufts on the disk.
- H. The tufts not metallic. Genus 7. LAVERNA.
- HH. The tufts metallic. Genus 8. CHRYSOCLISTA.
- GG. F.-w. smooth. Genera—9. HELIODINES. 10. ANYBIA. 11. ASYCHNA. 12. CHRYSOCORYS. 13. STEPHENSIA 14. ELACHISTA.

Genus 1. BEDELLIA.

Imago : head rough ; labial palpi rather short, almost porrected, pointed ; antennæ as long as the fore-wings, slender ; fore-wings narrow ; hind-wings extremely narrow.

B. SOMNULENTILLA. $4\frac{1}{2}'''$. F.-w. dirty ochreous, coarsely irrorated with fuscous, palest along the inner margin. VIII, X.

Larva pale green, tinged with purple, with a subdorsal row of purple spots; head pale brown. In leaves of *Convolvulus*. VIII b, IX.

M. Worthing, Lewisham, Worksop, Bideford, &c.

Genus 2. STATHMOPODA.

Imago: head smooth; antennæ shorter than the fore-wings, in the male with very delicate long hairs; labial palpi rather long, smooth, slender, recurved, pointed.

S. PEDELLA. $4\frac{1}{2}'''$ — $5'''$. F.-w. pale yellow, with the costa fuscous, and three fuscous spots on the inner margin, the second and third united by a slender fuscous streak near the costa. VII.

Near Brandon, in Suffolk.

Genus 3. COSMOPTERYX.

Imago: head smooth, the forehead extremely convex; antennæ scarcely as long as the fore-wings, with a *very long basal joint*.

C. EXIMIA. $4'''$. F. w. black, with an oblique silvery fascia near the base; a nearly straight fascia in the middle, and an oblique fascia beyond the middle silvery violet; between these is a deep orange band; above the anal angle is a short silvery streak, and another in the extreme tip. VII.

Larva whitish; dorsal and subdorsal lines crimson; head and 2nd seg. brown. In leaves of hop. VIII, IX.

Hackney; Lewisham.

C. LIENIGIELLA. $4\frac{1}{2}'''$ — $5'''$. F.-w. dark ochreous, with three slender silvery white streaks from the base nearly to the middle; beyond the middle are two silvery fasciæ, enclosing a



yellow band, beyond which a silvery streak runs to the extreme tip. VI, VII.

In the fens near Cambridge; not rare.

Genus 4. BATRACHEDRA.

Imago: head smooth; antennæ shorter than the fore-wings; the basal joint short; labial palpi moderately long, recurved, pointed.

B. PRÆANGUSTA. 7'''. F.-w. dirty whitish, varied with fuscous; on the fold before the middle is a short black line, surrounded by the pale ground-colour, and a similar ocellated mark lies on the disk. VII.

Larva between united leaves of poplar and willow. V.

Brs.!! Ca.! Da. K.! L.D. Lw.! M. Ne. Pm.! Sc.!! Y.

B. PINICOLELLA. 5''' — 6'''. F.-w. ochreous; the costa dark fuscous especially towards the tip; near the anal angle is a small fuscous spot. VI, VII.

Dartford Heath and Weybridge.

Genus 5. OINOPHILA.

Imago: head hairy in front; labial palpi rather short, slightly porrected; antennæ slender, nearly as long as the fore-wings; fore-wings narrow, subcaudate; hind-wings lanceolate.

O. V-FLAVA 4'''—5'''. F.-w. fuscous, with an angulated yellow fascia in the middle, and two yellow marginal spots beyond the middle. VII, VIII.

Larva dull whitish, with brownish dorsal vessel; head pale reddish brown. In fungi and wine corks. V, VI.

Bi. Brs.! Ne. and wine vaults in London.

Genus 6. CHAULIODUS.

Imago: head smooth; labial palpi of moderate length, rather thick, recurved; terminal joint rather pointed; *fore-*

wings elongate, with tooth-like projections of scales on the inner margin.

C. INSECURELLUS. $4\frac{1}{2}$ ". F.-w. dull whitish, with a tawny fascia in the middle, and beyond much suffused with tawny, leaving only two spots on the inner margin, one on the disk and one on the costa whitish; three tufts of black scales project from the inner margin. VII e, VIII.

At Stoat's Nest, near Croydon.

C. ILLIGERELLUS. 6". F.-w. pale ochreous, varied with fuscous; before the middle is a fuscous fascia-form streak, curved and expanded on the costa, and emitting a branch to the anal angle. VII.

Larva yellowish green, with darker dorsal vessel; head more yellowish. In crumpled leaves of *Egopodium Podagraria*. V, VI b.

Ca. ! Cardiff, Worcester, Brighton.

C. CHÆROPHYLLLELLUS. 6". F.-w. dark fuscous, varied with ochreous, with scattered white scales; a conspicuous whitish spot upon the costa before the tip (sometimes the basal half is whitish, followed by a broad fuscous fascia). VII, VIII, X, and IV h.

Larva greenish white; dorsal line whitish; head pale brown. On leaves of most *Umbelliferae*. VI e, IX, b.

Bi. Ca. ! Da. K. L.D. Lw. Ne. Sc. !! Y. !



Genus 7. LAVERNA.

Imago: head smooth; labial palpi moderately long, recurved; terminal joint pointed; fore-wings with raised tufts of scales on the disk; hind-wings linear-lanceolate.

L. CONTURBATELLA. 7"—8". F.-w. bluish black, with some rather indistinct tawny blotches; three tufts of black scales on the fold, and three others above them; beyond the middle are two conspicuous white marginal spots, that on the costa the larger and most posterior; head and thorax dark grey. VI, VII.

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Larva blackish. Among the terminal leaves of *Epilobium angustifolium*. V, VI.

Box Hill.

L. PROPINQUELLA. 6''' . F.-w. bluish fuscous, marbled with ochreous; a large white basal spot and a slender angulated white fascia beyond the middle; head and thorax white. VII.

Larva brown, delicately marbled with whitish; head black; 2nd seg. blackish in front. In leaves of *Epilobium hirsutum*. II, III.

Brs. Ca. Da. L.D. Sc.!! Y.

L. LACTEELLA. 5''' . Very similar to the preceding, but smaller, and the white markings replaced by pale ochreous. VI, VII.

Larva in the leaves of *Epilobium hirsutum*.

Brs. L.D. Sc.! Y.

L. RASCHKIELLA. 4'''—5''' . F.-w. black, somewhat tinged with violet, with two orange spots, one on the inner margin near the base, and one on the disk beyond the middle, united to a small whitish costal spot. VI, VIII.

Larva deep yellow, almost orange at the sides; dorsal vessel green; head dark brown. In leaves of *Epilobium angustifolium*. V, VII.

Box Hill.

L. MISCELLA. 3'''—4½''' . F.-w. grey, varied with tawny, with two yellowish spots towards the costa; two tufts of black scales near the inner margin; head grey. V, VI b, VIII.

Larva reddish, marbled with whitish; head and 2nd seg. blackish. In leaves of *Helianthemum vulgare*. III, IV, VII.

Al.! Brs.!! Da.! Sc.!!

L. STEPHENSI. 4''' . Very similar to the preceding, but ground-colour of f.-w. white; head also white. VIII.

Hainault Forest.

L. EPILOBIELLA. 5½''' . F.-w. pale ochreous, clouded with fuscous, with an appearance of two paler opposite spots beyond the middle, and with two fuscous tufts near the inner margin. VIII; V h.

Larva pale yellowish white. In tops of *Epilobium hirsutum*. VI, VII.

Brs. !! Ca. !! K. L.D. Lw. ! Pm. ! Tn. ! Y.

L. OCHRACEELLA. 7''' . F.-w. rather narrow, *pale yellow*, much suffused with dark yellow, the paler colour forming indistinct spots. VI e, VII.

Larva pale dull yellowish ; head pale brown. Burrows in the stems and roots of *Epilobium hirsutum*. V.

Bi. Da. Sc. !!

L. PHRAGMITELLA. 7'''—10''' . F.-w. pale ochreous ; a fuscous streak on the disk from the middle to the tip of the wing ; *along it are two black spots, edged with whitish*. VII.

Larva yellowish white, with brownish dorsal line, and pale grey-brown subdorsal and lateral lines ; head shining brown. In heads of *Typha latifolia*. V.

Ca. ! and Ranworth, Norfolk.

L. DECORELLA. 5½''' . F.-w. fuscous, clouded with tawny beyond the middle ; *the basal half of the inner margin is white* ; an oblique white fascia lies beyond the middle. IX, X ; IV h.

Brs. K. ! Pm.

L. SUBBISTRIGELLA. 5½''' . F.-w. fuscous, with an obscure paler spot on the inner margin near the base ; *a triangular whitish spot* on the inner margin before the middle, and an oblique white fascia beyond the middle, often interrupted. VI. Pm. ; Worthing ; and Chudleigh, Devon.

L. ATRA. 6''' . F.-w. black ; the inner margin white to beyond the middle, where an irregular oblique white fascia proceeds towards the tip, two branches from which intersect the black apical portion of the wing (sometimes the f.-w. are entirely black, but this may prove a distinct species). VI.

Larva in hawthorn-berries. IX ; (the black var. in budding shoots of apple. II, III).

Al. Bi. !! Brs. !! Ca. Da. ! K. ! M. Ne. Sc. !! Y. !



L. RHAMNIELLA. $5\frac{1}{2}'''$. F.-w. fuscous, mixed with ochreous, with four tufts of black scales. VII.

Ca. Pm. Sanderstead and Box Hill.

Genus 8. CHRYSOCLISTA.

Closely resembles the preceding genus, but the tufts of the fore-wings are mostly metallic.

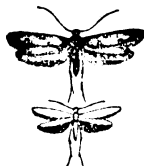
The four species of this genus may be tabulated as follows :—

A. F.-w. orange and black.

B. H.-w. with distinct anal angle. *C. Linneella* and *C. bimaculella*.

BB. H.-w. with no anal angle. *S. Schrankella*.

AA. F.-w. entirely black. *C. flavicaput*.



C. LINNEELLA. $5\frac{1}{2}'''$. F.-w. deep orange, edged with black, with three tufts of silvery black scales, two near the inner margin, and one intermediate near the costa (sometimes the orange ground-colour is replaced by fuscous). VII, VIII.

Larva yellowish white; head pale brown. Under bark of lime trees. XI—IV.

Brs. !! Abundant in the London Parks and most of the suburbs.

C. BIMACULELLA. $5\frac{1}{2}'''$. Closely allied to the preceding, but the *black edging on the costa broader at the base*, and posteriorly the orange reaches to the costa. VIe, VII.

Black Park and Leith Hill.

C. SCHRANKELLA. $5\frac{1}{2}'''$. F.-w. bright orange, with the base and tip black; an oblique silvery grey fascia before the middle, and a silvery grey streak beyond the middle, terminating between the yellowish white opposite spots (a dark variety occurs as in *Linneella*). VI, VIII.

Larva greyish green; head black; 2nd seg. black above. In leaves of *Epilobium alsinifolium*. V, VII.

Sc. !! Renfrew ! and Fochabers !

C. FLAVICAPUT. 6'''—7'''. F.-w. black, with two tufts of black scales : *head, face and tip of palpi bright yellow.* VI.

Bi.!! Brs.!! Ca.!! Da.! K.!! L.D. Lw.! M.! Ne.!! Pm.! Sc.!! Y.!

Genus 9. HELIODINES.

Imago : labial palpi small, rather thick, pointed ; abdomen rather thick, short ; fore-wings elongate ; hind-wings linear-lanceolate.

H. RÆSELLA. 5'''. F.-w. bright orange, edged with blackish, with a silvery blotch at the base ; a silvery fascia before the middle beyond it ; three silvery spots on the costa, and one on the inner margin. VII, VIII.

Larva pale green ; dorsal vessel rather darker ; head black ; 2nd seg. with two black spots above. On leaves of *Atriplex* and *Chenopodium*. VI.

Formerly taken near London.

Genus 10. ANYBIA.

Imago : labial palpi of moderate length, recurved ; terminal joint pointed ; fore-wings smooth.

A. LANGIELLA. 4½'''. F.-w. shining dark bronze, with a transverse snow-white spot above the fold beyond the middle. VIII.

Larva pale yellow, with dark green dorsal vessel ; head dark brown ; 2nd seg. black. In leaves of *Circea lutetiana*. VII.

L.D. Linton, Exeter.

Genus 11. ASYCHNA.

Imago : labial palpi of moderate length, curved ; terminal joint pointed ; fore-wings narrow, metallic, unicolorous ; hind-wings linear-lanceolate.

A. MODESTELLA. 5''' — 5½'''. F.-w. unicolorous, *pale bronzy green*; h.-w. greyish fuscous, with *ochreous fringes*. V.
Brs. Ca. Pm. !! Y. Lewisham !!

A. PROFUGELLA. 4'''. F.-w. *dull greyish bronze*, more or less tinged with fuscous; h.-w. dark grey, with paler fringes. VII.

Kemsing, Kent.

A. ERATELLA. 4½'''. F.-w. dark bronzy green, somewhat iridescent; h.-w. *very slender posteriorly*; antennæ little more than half the length of the f.-w. VI, VII.

Larva pale dull yellow; head and 2nd seg. pale brown. In pod-like galls formed on *Polygonum aviculare*. X—IV.

Pm.; Ripley; Reigate; near Dartford.

A. TERMINELLA. 4'''. F.-w. dark reddish orange; a black spot on the costa near the base, edged with silvery; beyond are three small silvery spots on the fold and two on the disk, and a silvery *white* spot on the costa before the tip. VI.

Larva whitish, with dark green dorsal vessel; head and 2nd seg. yellowish brown. In leaves of *Circaea lutetiana*. VIII, IX.

Brs. M. Pm. Sc. !! near Ticehurst, Sussex; and West Wickham Wood.

Genus 12. CHRYSOCORYS.

Imago: antennæ hardly longer than the body, rather thick; palpi moderately long, rather curved, slender, pointed; forewings narrow, with the costa almost retuse, but convex before the tip.

C. FESTALIELLA. 6'''. F.-w. bronzy yellowish green, with a dark fuscous line along the fold and hind-margin, and another on the disk running to the tip of the wing. V, VI.

Larva pale green, bristly; the spots glassy. On the under side of leaves of bramble and raspberry. VIII.

Bi. ! Brs. Da. K. L.D. ! Lw. ! M. ! Ne. !! Pm. Sc. !! Y. !

Genus 13. STEPHENSIA.

Imago: palpi short and drooping, terminal joint rather pointed; fore-wings narrow, elongate, with the costa slightly indented beyond the middle.

S. BRUNNICHELLA. 3'''—3½'''. F.-w. dark golden brown, with a golden fascia close to the base; a slender bright golden fascia in the middle; a golden spot *perpendicularly* placed at the anal angle, and one beyond it on the costa *pointing inwards*. V, VIII.

Larva greenish white; dorsal vessel dark green; head and 2nd seg. blackish. In leaves of *Clinopodium vulgare*. IV, VII.

Brs.! Da. Sanderstead, and Box Hill.

Genus 14. ELACHISTA.

Imago: palpi rather long and slender, slightly recurved; antennæ of moderate length; fore-wings smooth, elongate, rarely oblong; hind-wings narrow and pointed.

Larva mining the leaves of grasses and allied plants.

We have forty-one species in this genus, which may be tabulated as follows:—

A. F.-w. dark-coloured, with markings.

B. The markings metallic. *E. trapeziella*, *E. magnificella* and *E. Gleichenella*.

BB. The markings silvery white; a fascia and spots. *E. apicipunctella* and *E. albifrontella*.

BBB. The markings neither metallic nor shining, form a fascia and opposite spots.

C. The fascia distinct, but not reaching the inner margin. *E. cinereopunctella*.

CC. The fascia distinct and entire. *E. luticomella*, *E. flavicomella*, *E. atricomella*, *E. Kilmunella*, *E. Holdenella*, *E. nigrella*, *E. Gregsoni*, *E. stabilella* and *E. Bedellella*.

CCC. The fascia indistinct, sometimes very much so. *E.*

obscurella, *E. humilis*, *E. consortella*, *E. subnigrella*, *E. perplexella* and *E. Poæ*.

BBBB. The markings consist of a single fascia.

D. Head white. *E. Adscitella*.

DD. Head whitish or yellow. *E. Megerrella* and *E. obliquella*.

DDD. Head grey or brownish. *E. Zonariella*, *E. Cingillella*, *E. Gangabella* and *E. Tæniatella*.

BBBBB. The markings consist of a pale streak from the costa, and a dark spot on the fold. *E. serri-cornis*.

AA. F.-w. pale-coloured or whitish.

E. With two dark fasciæ beyond the middle. *E. cerusella*.

EE. With a dark spot on the middle of the fold, and a dark angulated fascia. *E. Rhynchosporella*, *E. Eleochariella* and *E. Paludum*.

EEE. With two dark spots, one on the middle of the fold, and one between it and the tip. *E. biatomella* and *E. triatomea*.

EEEE. With indistinct yellowish fasciæ. *E. pollinariella* and *E. subocellea*.

EEEEEE. With scattered dark scales. *E. rufocinerea* and *E. dispunctella*.

EEEEEE. Entirely spotless. *E. cygnipennella* and *E. ochreella*.

E. TRAPEZIELLA. $4\frac{1}{4}'''$. F.-w. brown, with a short silvery streak along the fold at the base; two silvery spots in the middle, and two at the hind-margin. VI.

Larva greenish grey, with a faint reddish tinge, sometimes spotted with red; head black. In leaves of *Luzula pilosa*. IV.

Brs. Sc. !! Middlesborough-on-Tees, and West Wickham.

E. MAGNIFICELLA. $4'''$. F.-w. rich brown, with a pale golden fascia near the base; on the middle of the inner margin is a pale golden spot, reaching *half across the wing*; a smaller golden spot lies near the anal angle, and a larger spot beyond it on the costa. VII.

Larva yellowish, with green dorsal vessel; head pale brown. In leaves of *Luzula pilosa*. IV, V.

Brs. !! and West Wickham !

E. GLEICHENELLA. $3\frac{1}{4}'''$. F.-w. black, with the base, a slender fascia in the middle and an angulated fascia beyond the middle pale golden. VI, VII.

Larva whitish, with a faint purplish tinge; head dark brown; 2nd seg. with two purplish black marks behind. In leaves of *Carex*, &c. III, IV.

Brs. !! L.D. M. Pm. Sc. !! Y. Sanderstead !! Mickleham !! and fens near Norwich.



E. APICIPUNCTELLA. $4\frac{1}{2}'''$ — $5'''$. F.-w. brownish black, with a curved central fascia; two opposite spots beyond the middle, and an apical spot beyond them silvery white (the ♀ has an additional silvery fascia at the base). VI.

Ca. K. L.D. ! M. Y. and on mosses in Scotland.

E. ALBIFRONTILLA. $4'''$ — $4\frac{1}{2}'''$. F.-w. brown-black, with a slightly oblique fascia before the middle, and two opposite spots beyond the middle, silvery white; head silvery white. VI.

Larva pale whitish yellow, of a duller white on the back; head pale brown; 2nd seg. dotted with brown. In leaves of various grasses. IV, V.

Al. Bi. ! Brs. !! Ca. Da. !! K. L.D. ! M. Ne. Pm. Sc. !! Tn. Y. !

E. CINEREOPUNCTELLA. $4'''$. F.-w. blackish; on the middle of the costa is an oblique whitish spot reaching to the fold; beyond are two whitish spots, one at the anal angle and one on the costa at the apex. V, VI.

Larva yellowish, whiter on the back, with a row of red spots on each side of the back. In leaves of *Carex glauca*. III, IV.

Brs. !! Ca. K. L.D. ! Lw. M. Pm. ! Tn. Y. !

E. LUTICOMELLA. $4\frac{1}{2}''' - 5\frac{1}{2}'''$. F.-w. dark brown; a rather curved fascia before the middle, and two opposite spots beyond the middle, yellowish white; *head and palpi bright yellow.* VI.

Larva pale yellow, with a pale brown head. In the leaves and stems of *Dactylis glomerata.* IV.

Bi. Brs. ! Ca. ! Da. !! L.D. M. Ne. Sc. !! Y.

E. FLAVICOMELLA. $3\frac{1}{2}''' - 4'''$. Smaller and duller than the preceding species, *with a small brown spot on the crown of the yellow head.* VII.

Near Dublin.

E. ATRICOMELLA. $4\frac{1}{2}''' - 5'''$. F.-w. greyish black, with *an interrupted slightly angulated* fascia before the middle; beyond the middle are two whitish opposite spots, that on the costa being the larger and more posteriorly placed; *head greyish black.* VI.

Larva similar to that of *E. luticomella.* In leaves and stems of *Dactylis glomerata.* IV, V.

Al. Brs. Da. ! K. L.D. Lw. M. Ne. Pm. Sc. !! Y.

E. KILMUNELLA. $4\frac{1}{2}''' - 5'''$. F.-w. *dingy* dark grey, with a *nearly straight* whitish fascia before the middle, frequently obsolete towards the costa, and two opposite whitish spots towards the hind-margin; *head dark grey.* VI, VIII.

Larva yellowish grey. In leaves of *Carex.* IV, VII.

L.D. ! M. Sc. !! and Kilmun !!

E. HOLDENELLA. $5'''$. F.-w. blackish, darker posteriorly; an oblique whitish fascia before the middle; beyond the middle are two opposite spots, that on the costa being the posterior, whiter and more distinct, *and of a subquadrate form*; head grey. VI.

Once taken near London.

E. NIGRELLA. $3\frac{1}{2}''' - 4'''$. F.-w. dark grey, with a rather indistinct whitish fascia before the middle; beyond the middle are two whitish nearly opposite spots, and a whitish spot in the apical fringes (in the ♀ the ground-colour is darker, and the spots whiter); head grey. V, VI, VIII.

Larva yellowish grey, with *pale brown* head. In leaves of *Poa trivialis*, &c. IV, VII.

Al. Bi. Brs.!! Da.!! K. L.D.! Lw. M. Pm.! Sc.!! Y.!

E. GREGSONI. $3\frac{1}{4}'''$ — $4'''$. Very similar to the preceding, but in the ♀ the spots are *more exactly opposite*. V.

Larva greyish yellow, with a *black* head, and two black spots on 2nd seg. In leaves of a *Poa*. III, IV.

Near Liverpool, and Edinburgh.

E. STABILELLA. $3\frac{1}{2}'''$. F.w. blackish, with an *oblique white fascia* before, and two white spots exactly opposite beyond, the middle; a whitish spot in the apical fringes; *head white*. VI, VII.

Headley Lane, near Mickleham.

E. BEDELLELLA. $3\frac{1}{4}'''$. F.-w. rather short and broad, grey, with a straight whitish fascia before the middle, and two whitish spots exactly opposite, and sometimes forming a second fascia beyond the middle. V, VIII.

Larva reddish green; head *pale brown*; 2nd seg. with two brownish spots. In leaves of *Avena pratensis*. IV, VII.

Brs.!! L.D.! Lw.! Pm. Sc.!! Box Hill!!

E. OBSCURELLA. $4\frac{1}{2}'''$. F.-w. grey, dusted with darker, with *very faint indications* of a paler fascia before the middle, and two opposite spots beyond the middle; head grey (female smaller and very different; f.-w. white at the base, with a grey blotch on the costa; before the middle is a straight white fascia, and beyond it the ground-colour is nearly black, with two opposite nearly triangular white spots). V, VIII.

Larva pale yellowish grey, with *pale brown* head. In leaves of *Holcus mollis*, &c. III, VII.

Al. Bi.! Brs.!! Ca. Da.! K. Lw. M.!! Pm. Sc.! Y.!

E. HUMILIS. $4'''$. Very similar to the preceding, but the spots more exactly opposite and more distinct, *that on the costa rather shining*; ♀ unknown. V e.

Bi. Sc. and West Wickham Wood.

E. CONSORTELLA. $3'''-3\frac{1}{2}'''$. F.-w. dark grey, with the fascia limited to a small white spot on the fold, followed by a short black streak; two whitish opposite spots beyond the middle almost form an angulated fascia, and some whitish scales proceed from them towards the tip of the wing (♀ very like *Nigrella*, but the fascia placed more obliquely). III.

Arthur's Seat, near Edinburgh.

E. SUBNIGRELLA. $3\frac{1}{2}'''$. F.-w. dingy grey, with a very indistinct, rather oblique, whitish fascia before the middle, and two indistinct opposite spots beyond the middle (the ♀ is blacker, with the markings whiter). V e, VIII.

Larva pale yellow; head pale brown. In leaves of *Bromus erectus*. IV, VII.

Brs. !! K. Sc. ! Sanderstead ! and Mickleham !

E. PERPLEXELLA. $4'''$. F.-w. blackish, with an indistinct oblique pale fascia before the middle, and two whitish spots almost exactly opposite beyond the middle. V, VII.

Larva whitish yellow. In leaves of *Aira cæspitosa*. IV, VI.

Sc. !! Beckenham, and Edinburgh.

E. POÆ. $4\frac{1}{2}'''-5\frac{1}{2}'''$. F.-w. rather glossy, dingy fuscous, darker beyond the middle; before the middle is a slightly angulated obscure pale fascia; beyond the middle are two very indistinct opposite spots (in the ♀ the fascia and spots are yellowish white and more distinct). V, VIII.

Larva pale whitish yellow; dorsal vessel greenish grey; head pale brown. In leaves of *Poa aquatica*. IV, VII e.

Hackney, Greenwich marshes, and ponds near Lewisham.

E. ADSCITELLA. $4\frac{1}{2}'''-5\frac{1}{2}'''$. F.-w. greyish fuscous, with two slender opposite whitish spots in the middle, forming an interrupted fascia (in the ♀ the fascia is entire, but attenuated in the middle); apical fringes whitish; head white. VI.

Larva dull yellowish green, more or less tinged with grey; head yellowish brown. In leaves of *Sesleria cærulea* and *Aira cæspitosa*. V.

Bi. Brs. Da. L.D. Sc. Y.

E. MEGERLELLA. $5'''$. F.-w. greyish ochreous, with a rather slender nearly straight whitish yellow fascia in the

middle; apical fringes pale yellowish; head yellowish white. V, VI, VIII.

Larva dull greenish grey; head pale brown; 2nd seg. with two dark brown blotches on the back. In leaves of *Brachypodium*, *Bromus*, &c. III, IV, VII.

Al. Brs. ! Da. Lw. ! M. Ne. Pm. Sc. !! Y.

E. OBLIQUELLA. $4\frac{1}{2}$ '''. F.-w. dark fuscous, with a nearly straight yellowish fascia rather beyond the middle; apical fringes pale yellowish; head yellowish. VI.

Once taken near London.

E. ZONARIELLA. 4'''. F.-w. dark fuscous, with a nearly straight pale yellowish fascia in the middle, tinged with orange posteriorly; apical fringes yellowish white; head brown. V, VII.

Larva dull grey-green; head pale brown; 2nd seg. with two brown blotches. In leaves of *Aira cæspitosa*. IV, VI.

Brs. Ca. Stockton-on-Tees, Renfrew, and Fochabers.

E. CINGILLELLA. 4'''. F.-w. dark grey, with a slender nearly straight whitish fascia in the middle; apical fringes whitish; head dark grey. VI, VII.

Near Chesterfield.

E. GANGABELLA. 4'''—5'''. F.-w. dark fuscous, with a nearly straight dull yellow fascia in the middle, attenuated towards the costa in the ♂ (in the ♀ of nearly uniform width); extreme tip of the apical fringes whitish; head dark fuscous. V e, VI.

Larva yellowish grey-green; head yellowish brown; 2nd seg. with two large pale brown blotches. In leaves of *Dactylis glomerata*, &c. XI—IV.

Al. Brs. Y. Beckenham! and Mickleham.

E. TENIATELLA. $4\frac{1}{2}$ '''. F.-w. dark brownish black, dusted with yellowish towards the tip; nearly in the middle is a straight deep yellow fascia; fringes entirely dark fuscous; head dark greyish brown. V.



Larva dark grey, with numerous small dark specks; head and 2nd seg. pale tawny. In leaves of *Brachypodium sylvaticum*. X, XI.

Sc. Middlesboro'-on-Tees, and West Wickham Wood.

E. SERRICORNIS. $3\frac{1}{2}$ '''. F.-w. grey, with a black spot on the fold beyond the middle, and a short oblique whitish streak from the costa before the tip, internally margined with dark grey; *antennæ much serrated towards the tip*. VI.

Pm. and Edinburgh.



E. CERUSELLA. 5'''. F.-w. whitish, with some scattered fuscous scales; beyond the middle *are two fuscous fasciæ*, each with a black spot internally. V, VIII.

Larva pale yellow; head brown; 2nd seg. with two pale brown spots. In leaves of reed. IV, VII.

Bi. ! Ca. ! Da. !! L.D. M. !! Sc. !! Y. !

E. RHYNCHOSPORELLA. $4\frac{1}{2}$ '''. F.-w. dull whitish; with pale tawny streaks along the costa and inner margin, and beyond the middle *an angulated pale tawny fascia*; *head white or whitish*. VI, VII.

Larva greenish grey, more yellowish in front; head dark brown. In leaves of *Eriophorum* and *Carex*. V.

Bi. !! Brs. Ca. !! L.D. M. !! Pm. Sc. !! Y.

E. ELEOCHARIELLA. $3\frac{1}{2}$ '''. Very similar to the preceding, but *smaller and greyer*; *head dark grey*. VI, VII.

Larva in leaves of *Eriophorum* and *Carex*. V.

Ca. !! L.D. Sc. Y.

E. PALUDUM. 4'''— $4\frac{1}{2}$ '''. F.-w. dark grey, with a white streak along the fold, in which is a short oblique black streak; beyond the middle are two large white opposite spots (*hind-margin more truncate than in Rhynchosporella*). V e.

Larva dull grey; head brown; 2nd seg. pale yellowish, with two brown spots. In leaves of *Carex paludosa* and *C. paniculata*. IV.

Fens near Norwich.

E. BIATOMELLA. $3\frac{1}{2}'''$. F.-w. greyish, with a whitish streak along the fold, in which is a black dot; from the costa beyond the middle is a short oblique whitish streak, at the end of which is another black dot. V, VI, VIII.

Larva yellowish; head brown; 2nd seg. with two pale brown marks above. In leaves of *Carex glauca*. IV, VII.

Brs. !! Ca. ! Lw. Ne. Sc.

E. TRIATOMEA. $4'''-4\frac{1}{2}'''$. F.-w. white, with two black dots, one on the middle of the fold, the other midway between it and the tip of the wing. VI, VII.

Al. Brs. Ca. Da. !! Lw. Ne. Sc. !!

E. POLLINARIELLA. $4'''-5'''$. F.-w. white, with three dirty ochreous fasciæ, darkest towards the costa (the second fasciæ is in the middle); along the fold and disk are some scattered dark scales. VI, VII.

Larva whitish grey; head brown; 2nd seg. with two black-brown marks. In leaves of *Brachypodium sylvaticum*. V.

Brs. ! Da. Lw. Sc. !! and Mickleham.

E. SUBOCALLEA. $4'''$. F.-w. white, with three dirty ochreous fasciæ (the second rather beyond the middle); on the disk are a few scattered dark scales; the whitish fringes intersected by a black line. VI, VII.

Al. Brs. ! Lw. Sc. and Mickleham.

E. RUFOCINEREA. $4'''-5'''$. F.-w. whitish, much suffused with brown, only the inner margin and a streak along the disk remaining of the pale ground-colour (the ♀ is whiter, with yellowish brown clouds). IV, V.

Larva pale dull yellow, with dark greenish grey dorsal vessel; head brown; 2nd seg. with two brownish marks. In leaves of *Holcus mollis*, &c. XII—III.

Abundant everywhere.

E. DISPUNCTELLA. $3\frac{1}{2}'''-4'''$. F.-w. white, with several scattered blackish scales, and sometimes two blackish dots. VI.

Brs. ! Lw. and the Lizard, Cornwall.

E. CYGNIPENNELLA. 5'''—6½'''. F.-w. white, unspotted. V e, VI.

Larva dull greenish grey, with whitish dorsal line; head pale brown. In leaves of *Dactylis glomerata*, &c. IV.

Al. ! Bi. !! Brs. !! Ca. ! Da. !! K. L.D. Lw. !! M. !! Ne. !! Sc. !! Y. !

E. OCHREEELLA. 5'''. F.-w. yellowish ochreous, unspotted, but sometimes clouded with fuscous along the costa. VI.

M. Pm. Y. ! Worthing.

Genus 15. TISCHERIA.

Imago: head rather rough behind; labial palpi short, filiform, drooping; antennæ much shorter than the fore-wings, in the male with hair-like ciliations.

Larva with 16 legs, but all very short and undeveloped; mining in leaves.

We have four species in this genus, which may be thus tabulated:—

A. F.-w. yellow.

B. No black spot at anal angle of f.-w. *T. Dodonæa* and *T. complanella*.

BB. A black spot at anal angle of f.-w. *T. marginea*.

AA. F.-w. brownish. *T. angusticollis*.

T. DODONÆA. 3½'''—4'''. F.-w. bright yellowish, clouded with pale grey along the costa and towards the hind-margin. VI.

Larva yellow; head reddish brown. In brown blotches in oak-leaves. IX.

Abbey Wood and West Wickham Wood.

T. COMPLANELLA. 4'''—5'''. Very like the preceding, but larger. VI.

Larva pale yellow; head pale brown. In whitish blotches in oak leaves. IX, X.

Bi. !! Brs. !! Ca. ! Da. !! K. !! L.D. Lw. ! M. Ne. ! Pm. !! Sc. !! Y.

T. MARGINEA. 4'''—4½'''. F.-w. bright yellowish, with the costa narrowly fuscous, and the hind-margin broadly fuscous; *above the anal angle is a round black spot.* V, VIII.

Larva greenish; head black; 2nd seg. with two blackish marks above. In leaves of bramble. XI—III and VI.

Bi. !! Brs. !! Ca. K. Lw. ! M. Pm. !! Sc. Tn. Y.

T. ANGUSTICOLLELLA. 4'''—4½'''. F.-w. dark purplish brown, with a narrow bronzy patch along the costa at the base. V, VI.

Larva pale green; head black; 2nd seg. black above. In leaves of rose. IX, X.

M. and near Sheffield.



Family XIII. LITHOCOLLETIDÆ.

Imago: head rough; labial palpi filiform, drooping; forewings elongate; hind-wings linear-lanceolate, with long fringes.

Larva with 14 feet; mining in leaves.

This family contains only a single genus, but that is very rich in species, and no less than forty-five occur in this country. Though the insects are small, they are very beautiful; and both in neatness of marking and richness of colouring they are peculiarly distinguished. Many of the species are excessively abundant, and only a very few still remain rarities with us. The perfect insects are very sluggish, but fly readily in the early morning. All the species appear to be double-brooded, and almost all pass the winter in the pupa state, making their appearance in the perfect state as soon as the warm weather gives intimation of the arrival of summer; the second brood of the perfect insect appears in August.

Genus 1. LITHOCOLLETIS.

Our forty-five species of this genus may be tabulated as follows:—

- A. F.-w. saffron ; no basal streak ; with costal and dorsal white streaks ; the first costal opposite the second dorsal.
L. Amyotella.
- AA. F.-w. white, with distinct oblique dark streaks or lines.
 - B. An oblique dark fascia from the base of the costa.
L. Roboris.
 - BB. The dark markings form distinct angulated fasciæ.
L. hortella and *L. sylvella*.
 - BBB. The dark markings are only slender lines. *L. Cramerella*, *L. Tenella* and *L. Heegeriella*.
- AAA. F.-w. saffron, pale ochreous or dark brownish, with pale or outlined basal streak, and with pale marginal streaks.
 - C. Basal streak distinctly paler ; marginal streaks generally with distinct dark margins towards the base.
 - D. First costal streak long, projecting beyond the first dorsal streak. *L. Alnifoliella*.
 - DD. The first pair of streaks unite and form a fascia.
L. nigrescentella, *L. irradiella*, *L. Lautella*, *L. Bremiella*, *L. Ulmifoliella*, *L. Spinoletta*, *L. cavella* and *L. viminetorum*.
 - DDD. First costal streak short, and first pair of streaks not forming a fascia. *L. salicicolella*, *L. pomifoliella*, *L. Torminella*, *L. spinicolella*, *L. Faginella*, *L. Coryli*, *L. Carpinicolella*, *L. triguttella*, *L. Lantanella*, *L. Vacciniella* and *L. quinqueguttella*.
 - CC. Basal streak outlined, but not paler than the ground-colour. *L. Quercifoliella* and *L. Messaniella*.
 - CCC. Basal streak distinctly pale ; marginal streaks with hardly any dark margins. *L. Scopariella* and *Ulicicolella*.
 - CCCC. Basal streak distinctly pale ; first pair of streaks placed very obliquely. *L. Viminella*, *L. Corylifoliella* and *L. Caledoniella*.

AAAA. F.-w. with two pale fasciæ and marginal streaks ; rarely with a very short basal streak. *L. Nicellii*, *L. Dunningiella*, *L. Frolichiella*, *L. Stettinensis*, *L. Kleemannella*, *L. Schreiberella*, *L. Emberizæpennella*, *L. tristrigella*, *L. Scabiosella* and *L. trifasciella*.

AAAAA. F. w. dull whitish, with indistinct darker marginal markings. *L. comparella*.

L. AMYOTELLA. 4'''. F.-w. bright saffron, with two costal and three dorsal streaks white ; *the first costal streak opposite the second dorsal streak.* V, VIII.

Larva in the under side of oak-leaves. VII, IX.

Brs. Da. L.D. Sc. !! Y.

L. ROBORIS. 4'''. F.-w. white, with an oblique golden brown fascia from the base of the costa ; beyond the middle are four short black lines from the costa, and one from the inner margin. V, VIII.

Larva in the under side of oak-leaves. VII, IX.

Brs. Da. ! L.D. Lw. Ne. !! Sc. !! Tn. Y.

L. HORTELLA. 4'''. F.-w. white, with three angulated fasciæ and two costal spots ochreous-yellow. V, VIII.

Larva in the under side of oak-leaves. VII, IX.

Brs. Worthing and Guildford.

L. SYLVELLA. 3'''—4'''. F.-w. white, with some transverse dark streaks near the base, then two angulated ochreous-brown fasciæ, followed by a straight fascia ; beyond are some small marginal spots. V, VIII.

Larva in the under side of maple-leaves. VII, IX.

Brs. !! Ne. Pm. ! Sc. !! Y. and Lewisham !!

L. CRAMERELLA. 3½'''—4½'''. F.-w. pearly white, with three dark lines from the costa and two from the inner margin, edged internally with pale fuscous ; at the apex is a round black spot. V, VIII.

Larva in the under side of oak-leaves. VII, IX.



Bi. ! Brs. !! Da. !! L.D. ! Lw. !! M. Ne. ! Pm. !! Sc. !!
Tn. !! Y. !

L. TENELLA. $3\frac{1}{2}'''$. F.-w. white or whitish, with *four* dark lines from the costa and *three* from the inner margin, edged internally with yellowish; at the apex a *short* black streak. V, VIII.

Larva in the under side of hornbeam-leaves. VII, IX.

Brs. Lw. and Wanstead !

L. HEEGERIELLA. $3\frac{1}{2}'''$. F.-w. white, with a *blackish* basal line, and *four* dark lines from the costa and *three* from the inner margin edged internally with pale fuscous; at the apex is an *oval* black spot. V, VIII.

Larva in the under side of oak-leaves. VII, IX.

Brs. ! Da. ! L.D. ! Lw. Pm. ! Sc. Tn. Y.

L. ALNIFOLIELLA. $3\frac{1}{2}'''$ — $4'''$. F.-w. whitish or dark fuscous, with a basal streak, four costal and three dorsal streaks white; the *first costal streak reaches more than half across the wings*; at the apex is a round black spot. V, VIII.

Larva in the under side of alder-leaves. VII, IX.

Bi. ! Brs. !! Da. !! L.D. ! Lw. ! M. !! Ne. !! Sc. !! Y. !

L. NIGRESCENTELLA. $4\frac{1}{2}'''$. F.-w. *blackish brown*, with a *silvery* basal streak; four costal and three dorsal spots silvery; the first pair of spots meeting, *form an angulated fascia*; apical black spot nearly round. V.

Once at Morpeth.

L. IRRADIELLA. $3'''$ — $3\frac{1}{2}'''$. F.-w. *olivaceous-fuscous*, with a slender short silvery basal streak; three costal streaks and three short basal streaks silvery; at the apex are a few black scales. V, VIII.

Larva in the under side of oak-leaves. VII, IX.

Sc. ! and Renfrew.

L. LAUTELLA. $3\frac{1}{2}'''$ — $4'''$. F.-w. *bright reddish orange*, with a short silvery basal streak, and four costal streaks and two dorsal streaks *silvery*; the first pair of streaks often unite and form a fascia. V, VIII.

Larva in the under side of oak-leaves. VII, IX.

Brs. ! Lw. Pm. Sc. !! Tn. Y.

L. BREMIELLA. $3\frac{1}{2}''$ — $4\frac{1}{2}''$. F.-w. *dark saffron*, with a short straight silvery basal streak; in the middle is an angulated silvery white fascia, and beyond are three small costal streaks and two larger dorsal streaks *silvery white*; apical spot blackish. IV, VIII.

Larva in the under side of leaves of *Vicia sepium*. VII, IX.

Da.!! Ne.! Sc. and Bexley!

L. ULMIFOLIELLA. $4''$. F.-w. *dark saffron*, with a straight rather short whitish basal streak; an angulated whitish fascia and three costal and two dorsal streaks whitish; *the last costal streak is immediately over the round apical black spot*. V, VIII.

Larva in small mines in the under side of birch leaves. VII, IX.

Bi. Brs.! Da.!! L.D.! Lw.! M.! Ne.! Pm. Sc.!! Y.!

L. SPINOLELLA. $3\frac{1}{2}''$ — $4\frac{1}{2}''$. F.-w. *saffron*, more or less clouded with grey, with a *short unmarginated white basal streak*; a *slightly curved white fascia* before the middle, and beyond three costal and two dorsal streaks white; the apical black spot is oval. V, VIII.

Larva in the under side of leaves of *sallow*. VII, IX.

Brs.!! Da.!! L.D.! M.! Ne.! Pm.! Sc.!! Y.!

L. CAVELLA. $4\frac{1}{2}''$. F.-w. *saffron*, with a white unmarginated basal streak, and with four short costal streaks and three longer dorsal streaks white; the first pair often unite, and form an *angulated fascia*; above the apical black spot are a few white scales. V, VIII.

Larva in a large mine in the under side of birch leaves. VII, IX.

West Wickham Wood.

L. VIMINETORUM. $3\frac{1}{2}''$ — $4\frac{1}{2}''$. F.-w. *dull ochreous-brown*, with a very slender unmarginated white basal streak, *touching which is a triangular white spot on the inner margin*; in the middle is an angulated white fascia, followed by three costal and two dorsal white streaks; the apical black spot is oval. V, VIII.

Larva in the under side of osier-leaves. VII, IX.

Lw. M.!! Ne.!! and Lewisham !!

L. SALICICOLELLA. $3\frac{1}{2}'''$ — $4\frac{1}{2}'''$. F.-w. *shining, pale saffron*, with a very slender unmargined white basal streak; on the inner margin near the base is a small white spot, *not reaching to the basal streak*; beyond are four costal and three dorsal white streaks; sometimes the first pair unite. V, VIII.

Larva in the under side of leaves of sallow. VII, IX.

Brs. ! Lw. M.!! Ne.!! Pm. ! Sc. and Lewisham !!

L. POMIFOLIELLA. $3'''$ — $4'''$. F.-w. bright saffron, varying to golden brown; the white basal streak is dark margined towards the costa; on the costa are four white streaks, and on the inner margin three, all internally dark margined; at the apex is an obscure black streak; hind tarsi whitish, spotted with dark fuscous. V, VIII.

Larva in the under side of leaves of hawthorn and apple. VII, IX.

Brs.!! Da.!! L.D. ! Lw. ! M.!! Ne.!! Pm. ! Sc.!! Y. !

L. TORMINELLA. $3\frac{1}{2}'''$. Very like the preceding, but f.-w. paler, with *purser* white markings and the dark margin of the basal streak sometimes wanting. V, VIII.

Larva in the under side of leaves *Sorbus torminalis*. VII, IX.

Brs. M. ! and Lewisham.

L. SPINICOLELLA. $3'''$ — $3\frac{1}{2}'''$. Resembles the two preceding, but f.-w. paler; the basal streak *more slender*, and the hind tarsi white, unspotted. V, VIII.

Larva in the under side of leaves of sloe. VII, IX.

Brs. Da.!! M.!! Ne. Pm. ! Sc.!! Y.

L. FAGINELLA. $3\frac{1}{2}'''$ — $4\frac{1}{2}'''$. Resembles the preceding, but the white basal streak *straighter* and *un-margined*, and the marginal streaks with broad dark margins internally; hind tarsi entirely whitish, or spotted with very pale fuscous. V, VIII.

Larva in the under side of beech-leaves. VII, IX,

Brs.!! Da. ! L.D.!! Lw. ! M.!! Ne.!! Pm. ! Sc. ! Y.!!

L. CORYLI. $3\frac{1}{2}'''$. F.-w. *ochreous*, or ochreous-brown, with a straight *snowy white*, unmargined basal streak, and with four costal and three dorsal streaks snowy white, internally dark margined. V, VII.

Larva in the upper side of nut leaves. VII, IX.

Bi. !! Brs. !! Da. !! Lw. M. !! Ne. Pm. Sc. !! Y. !

L. CARPINICOLELLA. $4'''$. Very similar to the preceding, but the first costal streak is continued *along the costa towards the base, and has no dark margin*. V, VIII.

Larva in the upper side of leaves of hornbeam. VII, IX.
Pm. ! Wanstead ! and Lewisham !

L. TRIGUTTELLA. $4'''$. F.-w. shining saffron, with a slender white basal streak dark-margined on both sides ; and with *three costal* and three dorsal streaks white, internally dark margined. V.

Once at Sanderstead.

L. LANTANELLA. $4'''$. F.-w. *shining, pale saffron*, with a basal streak dark margined towards the costa ; four small costal and three dorsal streaks *silvery white*, internally with dark margins ; apical black streak long and thin, and with some white scales above. V, VIII.

Larva in the under side of leaves of *Viburnum lantana*. VII, IX.

Brs. !! Pm., Sanderstead, Teignmouth and Mickleham.

L. VACCINIELLA. $4'''$. F.-w. bright saffron, with a slender shining white basal streak, dark margined towards the costa ; and with four short costal and three dorsal streaks shining white, internally dark-margined ; *the usual white scales on the inner margin between the base and the first dorsal streak are totally wanting*. VI, VIII.

Larva in the under side of leaves of *Vaccinium Vitis-Idæa*. IV, V, VII.

M. Ne. !! Sc. !! Harrogate and Fochabers.

L. QUINQUEGUTTELLA. $3'''$. F.-w. bright saffron ; basal streak silvery white, *above it along the costa is a silvery-white streak*, and beyond are the ordinary four costal and three dorsal streaks. V, VIII.

Larva in the under side of leaves of dwarf willow. VII, IX.

Sc.!! Y.! and Liverpool.

L. QUERCIFOLIELLA. $3\frac{1}{2}''$ — $4''$. F.-w. pale saffron, with the basal streak of the ground-colour, dark-margined on both sides, *and reaching beyond the middle*, and with four costal and three dorsal streaks paler, internally dark-margined; the apical black spot is round. V, VIII.

Larva in the under side of oak-leaves, VII, IX.

Bi.!! Brs.!! Da.!! L.D.! Lw.! M.!! Ne.!! Pm.!! Sc.!! Tn.!! Y.

L. MESSANIELLA. $4''$ — $4\frac{1}{2}''$ F.-w. saffron, with a straight basal line, hardly paler than the ground-colour, dark-margined on both sides, *not reaching to the middle*, and with four costal and three dorsal streaks yellowish white, internally dark-margined; *the first dorsal streak is very long and curved, its apex reaching over the apex of the second dorsal streak*. V, VIII, XI.

Larva in the under side of leaves of evergreen oak, oak, &c. IV, VII, X.

Bi.!! Brs.!! Da.!! Lw.! M.!! Ne.!! Pm.!! Sc. Tn.!! Y.!

L. SCOPARIELLA. $3\frac{1}{2}''$ — $4''$. F.-w. dull saffron, with a slender basal streak, four costal and three dorsal streaks white and unmargined; *the basal streak frequently unites with the first costal streak, which is obliquely placed and rather long; no dark line in the fringes*. VI, VII.

Brs. Dartford Heath and Airthrey.

L. ULICICOLELLA. $3\frac{1}{2}''$. Resembles the preceding, but more shining; *the costal streaks all short, and in the fringes a dark line goes round the tip of the wing*. VIe, VII.

Brs.!! Da. and Dartford Heath.

L. VIMINIELLA. $4''$. F.-w. dull ochreous, with a slender basal streak, four costal and three dorsal streaks *very pale ochreous*. V, VIII.

Larva in the under side of leaves of willow. VII, IX.

Brs.!! Da. M.! Sc.!! Y. and Dawlish!

L. CORYLIFOLIELLA. $4\frac{1}{2}'''$. F.-w. *reddish ochreous*, with a very slender, unmarginated, *whitish*, basal streak; in the middle are two very slender, obliquely placed, opposite, whitish streaks; beyond them are two dark grey patches, and two very small whitish marginal spots. V, VIII.

Larva in the upper side of leaves of hawthorn. VII, IX.

Bi. !! Brs. !! Da. M. Ne. !! Pm. ! Sc. !! Tn. Y. !

L. CALEDONIELLA. $4\frac{1}{2}'''$. Resembles the preceding, but f.-w. *much suffused with black scales*, and the markings *whiter* (but probably not truly distinct). V, VIII.

Larva in the upper side of leaves of hawthorn. VII, IX.

Da. L.D. M. Sc. ! Y. and Torwood, Stirlingshire.

L. NICELLII. $3\frac{1}{2}'''$. F.-w. shining saffron, with two slightly curved fasciæ and one angulated silvery whitish fascia, internally dark-margined; beyond are two small costal streaks and one smaller dorsal streak; apical black streak elongate-oval. V, VIII.

Larva in the under side of nut-leaves. VII, IX.

Brs. !! Da. !! Sc. !!

L. DUNNINGIELLA. $4'''$. F.-w. *narrow, dark reddish brown*, with two slightly curved fasciæ, three costal and two dorsal streaks yellowish silvery, internally dark-margined; apical black streak oval. V, VIII.

L.D. ! Pm. Sc. ! Y.

L. FROLICHIELLA. $4\frac{1}{2}'''$. Resembles the preceding, but f.-w. *broader and brighter*; the first pair of streaks more opposite, and forming *an angulated fascia*, and *the dark apical streak not collected into a regular form*. V, VIII.

Larva in the under side of alder-leaves. VII, IX.

Bi. Brs. Da. L.D. ! Sc. !! Tn. ! Y. !

L. STETTINENSIS. $3'''-3\frac{1}{2}'''$. Closely allied to the two preceding, but *with a slender, short, yellowish silvery basal streak*. V, VIII.

Larva in the upper side of alder-leaves. VII, IX.

Brs. Da. Sc. !! Y. ! and Beckenham !!

L. KLEMANNELLA. $2\frac{1}{2}'''$ — $3\frac{1}{2}'''$. Closely allied to the three preceding, but with *no basal streak*, and beyond the two fasciæ are only *two costal streaks instead of three*, and the apical black spot is round. V, VIII.

Larva in the under side of leaves of alder. VII, IX.

Da. M. Sc.

L. SCHREBERELLA. $3'''$. F.-w. rich reddish orange, with two silvery fasciæ, a silvery white costal streak and a silvery dorsal streak running into the apex of the wing. V, VIII.

Larva in the under side of elm-leaves. VII, IX.

Brs. !! M. Sc. and Lewisham !!

L. EMBERIZÆPENNELLA. $4'''$ — $5'''$. F.-w. saffron, with a very short unmargined whitish basal streak, with two curved whitish fasciæ, followed by *two costal and three dorsal streaks* whitish. V, VIII.

Larva in large mines in the under side of leaves of honeysuckle. VII, IX.

Brs. Da. !! L.D. ! M. !! Pm. Sc. !! Y. !

L. TRISTRIGELLA. $3\frac{1}{2}'''$ — $4'''$. F.-w. reddish ochreous, with a small yellowish spot in the middle of the base; then follow three whitish fasciæ, the third of which is angulated, and from its angle a whitish streak runs into the costa at the apex. V, VIII.

Larva in the under side of elm-leaves. VII, IX.

Bi. Brs. !! Da. !! Lw. Ne. !! Sc.

L. SCABIOSELLA. $3\frac{1}{2}'''$ — $4'''$. F.-w. shining *coppery brown*, with a very short and narrow unmargined white basal streak, and with two shining white fasciæ, followed by two costal streaks and one dorsal streak, *white*. V, VIII.

Larva in the under side of the radical leaves of *Scabiosa Columbaria*. IV, VII.

Near Sanderstead ! and Mickleham.

L. TRIFASCIELLA. $4'''$. F.-w. reddish ochreous, with three slender whitish fasciæ, *internally bordered with black, most broadly towards the costa*; the second and third fasciæ are distinctly angulated, and from the third some black scales are continued to the anal angle. V, VIII, XI.

Larva in rather small mines in the under side of leaves of honeysuckle. IV, VII, IX.

Bi. Brs. ! L.D. Lw. M. !! Ne. Pm. ! Sc. !! Tn. ! Y. ; very abundant in Devonshire.

L. COMPARELLA. 4''' . F.-w. white, dusted with pale fuscous ; on the costa are three short oblique ochreous-brown streaks, alternating with three similar smaller dorsal streaks ; *at the apex is a black streak.* V, VIII.

Larva in the under side of poplar-leaves. VII, IX.
Sparingly round London.

Family XIV. LYONETIDÆ.

Imago: antennæ more than half as long as the fore-wings, the basal joint expanded into an eye-cap ; head generally smooth ; labial palpi short, drooping (sometimes wanting) ; fore-wings narrow, sometimes caudulate ; hind-wings lanceolate.

Larva with 16 legs, mostly miners.

This is a family of small extent, comprising twenty-two British species, divided amongst five genera. The species of the genus *Cemistoma* are strikingly beautiful ; but the insects are so small, and their habits so sluggish, that they rarely thrust themselves upon our notice, yet the commoner species can always be found by those who know where to look for them. The insects of the genus *Bucculatrix* are the least attractive in the perfect state ; but the habits of the larvæ are very curious, and the mode in which they construct their cocoons is perfectly marvellous. Most of these insects pass the winter in the pupa state, and appear on the wing in May and June ; but it would appear that in the two first genera, *Lyonetia* and *Phyllocnistis*, the perfect insects hibernate.

The five genera of this family may be thus tabulated :—

A. Antennæ as long as the fore-wings. Genus 1. LYONETIA.

AA. Antennæ shorter than the fore-wings.

B. Head quite smooth.

C. Palpi filiform. Genus 2. PHYLLOCNISTIS.

CC. No palpi. Genus 3. CEMIOSTOMA.

BB. Head with a tuft on the crown.

D. Palpi filiform. Genus 4. OPOSTEGA.

DD. No palpi. Genus 5. BUCCULATRIX.

Genus 1. LYONETIA.

Imago : head smooth ; antennæ as long as the fore-wings, slender, with a moderate-sized basal eye-cap ; fore-wings caudate.

L. CLERCKELLA. 4''''. F.-w. white, with a longitudinal fuscous blotch on the disk beyond the middle, followed by a narrow fuscous fascia and three short fuscous streaks ; at the apex is a deep black spot (sometimes the f.-w. are suffused with bronzy fuscous, concealing nearly all the markings). VI, VIII ; XI—IV.

Larva pale green, making *long serpentine* mines in leaves of apple, cherry, &c. V, VII ; IX, X.

Brs. !! Ca. Da. !! K. L.D. M. Pm. Sc. !! Y. !

L. PADIFOLIELLA. 4½''''. F.-w. snowy white, with a broad fuscous streak along the costa, darkest and sinuated towards the inner margin ; beyond the middle of the inner margin is a dark fuscous streak, running obliquely towards the apex, where there is a deep black spot. IX, X.

Larva pale green, making *large blotches* in the leaves of sloe, birch, &c. VII, VIII.

Near Stony Stratford.

Genus 2. PHYLLOCNISTIS.

Imago : head smooth : antennæ with a small eye-cap ; labial palpi drooping, filiform ; fore-wings caudate.

P. SUFFUSELLA. 3½''''. F.-w. white, with a fuscous blotch

on the disk beyond the middle, and above it on the costa a short fuscous streak, followed by three other short streaks nearly straight, the first of which unites with a dorsal streak; at the apex is a deep black spot. VII, IX—IV.

Larva pale green, mining large spaces in leaves of poplars. VI, VIII.

Brs. Mickleham !!

P. SALIGNA. 3''''. Very like the preceding, but the fuscous blotch beyond the middle is *enclosed between two dark lines which proceed from the base*. VII, IX—IV.

Larva mining the under side of smooth-leaved willows. VI, VIII.

Pm. and near London.

Genus 3. CEMIOSTOMA.

Imago: head smooth; antennæ with a moderate-sized eye-cap; palpi wanting; fore-wings caudulate.

We have only five species in this genus, but some of them are so excessively similar that it is scarcely possible to distinguish them in the perfect state.

C. SPARTIFOLIELLA. 3½''''. F.-w. white; on the costa beyond the middle is an oblique pale yellow spot, edged with fuscous; beyond it is another costal spot, placed more perpendicularly; *its sides are converging*; below it is a black spot, with a violet pupil; fringes white, with three dark fuscous streaks. VI, VII.

Larva slender, greenish; burrowing under the bark of broom. IV, V.

Bi. !! Brs. ! Ca. ! Da. !! K. L.D. ! M. Ne. !! Pm. ! Sc. ! Y. !

C. LABURNELLA. 3½''''. Extremely like the preceding, but the sides of the second costal spot *are parallel and not converging*. V, VIII.

Larva greenish white, making large pale blotches in leaves of laburnum. VII, IX.

Ca. ! K. ! M. and round London !!

C. WAILESELLA. 3'''. Very like the two preceding, but smaller, and with a faint bluish tint. V, VII.

Larva pale yellowish green, forming first a long gallery, and then a large blotch in leaves of *Genista tinctoria*. VI, VIII.

Ne. ! Pm. ! and near Mottram.

C. SCITELLA. 3'''. F.-w. leaden grey; from the costa beyond the middle is an oblique brownish streak; beyond it are two short white streaks on the costa, separated by a coppery blotch which reaches more than half across the wing; at the anal angle is a large black spot, with a violet pupil; fringes with four radiating dark lines; two towards the costa, one straight out to the extreme apex, and the fourth drooping. VI, VII.

Larva pale greenish white; head blackish; 2nd seg. black above. In flat brown blotches in leaves of hawthorn, apple, &c. VIII, IX.

Bi. !! Brs. !! Da. !! M. Ne. !! Sc. Tn. !! Y. ! and near London !!

C. LOTELLA. 2½'''. Very like the preceding, but f.-w. narrower; the apical portion of the wing black instead of coppery, and of the two lower radiating lines one points slightly upwards and one slightly downwards. V, VI.

Larva yellowish white; head pale brown; 2nd seg. yellowish brown. In leaves of *Lotus major*. VII, VIII.

Sc. !!

Genus 4. OPOSTEGA.

Imago: head rather rough in front; antennæ with large eye-cap at the basal joint; palpi short, drooping; fore-wings not pointed, not caudulate.

O. SALACIELLA. 5'''. F.-w. whitish, unspotted, with a very faint yellowish tinge. VI, VII.

M. !! Guildford ! and Dartford Heath.

O. AURITELLA. 4½'''. F.-w. white, with an oblique fuscous spot on the middle of the inner margin; at the apex is a black spot, from which arise three short fuscous streaks towards the

costa, two towards the inner margin, and two in the fringes.
VI.

In the fens near Cambridge.

O. CREPUSCULELLA. 4'''. F.-w. white, with a small fuscous streak before the middle of the inner margin, and beyond it a broader fuscous streak on the costa; towards the apex are two short fuscous costal streaks; at the extreme apex is a black dot. VI, VII.



Al. Brs. Ca. !! Da. M. Sc. !! Y.!

Genus 5. BUCCULATRIX.

Imago: head rough, tufted; antennæ rather short, with a small eye-cap at the basal joint; no palpi; fore-wings caudulate.

Larvæ, miners when young, generally afterwards feeding externally.

B. AURIMACULELLA. 4'''. F.-w. pale greyish bronze, with two yellowish white spots on the costa and two on the inner margin; the first dorsal spot is continued along the fold towards the base of the wing. V, VIII.

Larva yellowish green, dotted with whitish; head pale brown; 2nd seg. speckled with black. On leaves of *Chrysanthemum leucanthemum*. IV, VII.

Brs. ! Da. L.D. ! Y.

B. CIDARELLA. 4'''. F.-w. purplish brown, with two whitish spots on the costa and two on the inner margin. V, VI.

Larva yellowish green, dotted with white; the anterior segs. orange; head pale brown. On leaves of alder. VIII, IX.

L.D. Lw. M. !! Pm. ! Sc. !! Y. ! and Reigate !

B. ULMELLA. 3½'''. F.-w. yellowish ochreous, with four oblique fuscous spots on the costa and two on the inner margin. V, VI, VIII.

Larva pale olive-grey, dotted with whitish; head pale

brown ; 2nd seg. brownish grey, dotted with black. On leaves of oak. VII, IX, X.

Brs. ! Lw. ! M. Pm. ! Y.

B. CRATEGI. 4'''. F.-w. *dull whitish*, dusted with fuscous ; *a fuscous patch* along the costa at the base, *followed by two fuscous* costal spots, united on the disk by a black dash ; on the inner margin are two fuscous spots. V, VI.

Larva dull green, dotted with yellowish ; head pale brown. On leaves of hawthorn. VIII.

Brs. !! Da. ! Lw. ! M. Pm. ! Sc. Y. and Lewisham !!

B. DEMARYELLA. 4'''. F.-w. fuscous, *with two pairs of obliquely-placed pale streaks*, forming angulated fasciæ ; the space between them dark fuscous. V, VI.

Larva dull dark green, dotted with white ; head brown. On leaves of birch. VIII.

Lw. Pm. Sc. !

B. MARITIMA. 4'''—4½'''. F.-w. variable in colour and markings, sometimes fuscous, with two pairs of obliquely-placed opposite white spots and a white basal streak, and an additional whitish costal spot at the apex ; sometimes the pale markings are entirely obliterated by the uniform dark fuscous tint of the wings. VII.

Larva pale greyish green, dotted with whitish ; head yellowish ; 2nd seg. yellowish grey, dotted with blackish. In long slender mines in leaves of *Aster Tripolium*. V.

Brs. !! Ne. Brighton, Southend, Essex, and near Gravesend.

B. BOYERELLA. 4'''. F.-w. *white*, dusted with fuscous, with *three* oblique fuscous streaks from the costa ; the second and third, each terminating in *a black line* ; a fuscous blotch on the middle of the inner margin is internally edged with black. V, VI.

Larva on leaves of elm. VIII.

Brs. Pm. ! Y.

B. FRANGULELLA. 3½'''. F.-w. *white*, dusted with fuscous towards the apex, with *four* costal spots and one dorsal spot fuscous ; a *black dot* on the fold in the middle, and *another* on the disk towards the apex. VI, VII.

Larva on leaves of buckthorn. VIII, IX.

Brs. Pm. Tn. and Sanderstead.

B. HIPPOCASTANELLA. 3'''. F.-w. greyish fuscous, with a yellowish spot at the base; a yellowish angulated fascia before the middle, sometimes interrupted, and a larger yellowish patch at the anal angle, intersected by a narrow line of the dark ground-colour running to the extreme apex. V, VI.

Larva dull whitish yellow, tinged with reddish in front; head pale whitish yellow. On leaves of lime. VIII.

Brs. !! M.

B. CRISTATELLA. 3'''. F.-w. unicolorous, shining, pale grey. VI, VIII.

Larva pale greenish, dotted with whitish; head pale brown; 2nd seg. yellowish, dotted with brown. On leaves of yarrow. IV, V, VII.

Brs. ! Sc. !! and near Sanderstead.

Family XV. NEPTICULIDÆ.

Imago: head hairy; antennæ short and thick, the basal joint with a moderate-sized eye-cap; maxillary palpi rather long, folded; labial palpi short, almost porrect; fore-wings rather broad, short, and coarsely scaled; hind-wings lanceolate.

Larva with no true legs, but with nine pairs of ill-developed pro-legs; mining in the interior of leaves; forming long slender galleries or irregular blotches.

This is a rather numerous family, though the species are all small; indeed, it is here that we meet with the smallest known Lepidopterous insects. Many of them are excessively beautiful, resplendent with burnished copper, gold and silver scales. They may be observed in the months of May and June, sitting on the trunks of trees or on palings; but to see these atoms requires an experienced eye. Most of the species appear to be double-brooded, and are easily collected in plenty in the larva

state: a nut-leaf containing from twenty to thirty larvæ of *Nepticula microtheriella* is no unusual sight.

We have three genera in this family, but the two first are only distinguished by the neuration of the wings.

- A. Antennæ not half as long as the fore-wings. Genera—
1. NEPTICULA. 2. TRIFURCULA.
AA. Antennæ more than half as long as the fore-wings. Genus 3. BOHEMANNIA.

Genus 1. NEPTICULA.

Our forty-three species of this genus may be thus tabulated:—

- A. F.-w. with no distinct fascia.
B. F.-w. with fine scales, hence more or less shining, unicolorous. *N. atricapitella*, *N. ruficapitella*, *N. pygmaella*, *N. Pomella*, *N. Oxyacanthella*, *N. viscerella* and *N. anomalella*.
BB. F.-w. coarsely scaled, and therefore dull.
C. F.-w. unicolorous. *N. cryptella*.
CC. F.-w. with a single spot on the inner margin. *N. Catharticella*, *N. Septembrella* and *N. intimella*.
CCC. F.-w. with two opposite pale spots. *N. Headleyella*, *N. Weaveri*, *N. subbimaculella*, *N. argyropeza* and *N. apicella*.
CCCC. F.-w. with pale spots, and with a pale fascia. *N. sericopeza*.
CCCCC. F.-w. with two opposite pale spots, and a broad basal streak. *N. trimaculella*.
CCCCCC. F.-w. with three pale spots. *N. quinquella*.
AA. F.-w. with distinct fascia.
D. F.-w. rather coarsely scaled; the fascia whitish, not metallic. *N. Salicis*, *N. Myrtillella*, *N. flos-lactella* and *N. luteella*.
DD. F.-w. more finely scaled; the fascia more or less metallic, often silvery or golden. *N. ignobilella*, *N. arcuata*, *N. angulifasciella*, *N. atricollis*, *N. microtheriella*, *N. Poterii*, *N. argentipedella*, *N.*

Acetosæ, *N. betulicola*, *N. Plagicolella*, *N. Mallella*, *N. Tityrella*, *N. Glutinosæ*, *N. Prunetorum*, *N. Regiella*, *N. continuella*, *N. Alnetella*, *N. marginicolella* and *N. aurella*.

N. ATRICAPITELLA. 3'''. F.-w. dark bronze, posteriorly violet; head *black*. V, VIII.

Larva in slender galleries in oak-leaves. VII, IX, X.

Brs. ! Da. ! Lw. M. ! Sc. !! Y. and Lewisham !!

N. RUFICAPITELLA. 3'''. F.-w. rather pale bronze, posteriorly violet; head *reddish*. V, VIII.

Larva in slender galleries in oak-leaves. VII, IX, X.

Brs. Da. ! Lw. M. ! Ne. Sc. !! Y. and Lewisham !!

N. PYGMÆELLA. 2'''—3'''. F.-w. *pale ashy grey*, with a very slight violet tinge towards the apex; head *yellowish*. V, VIII.

Larva yellowish. In small blotches in the leaves of hawthorn. VII, IX, X.

Brs. !! Da. ! Lw. M. !! Ne. ! Sc. !! Y. and Lewisham !!

N. POMELLA. 3'''. F.-w. *glossy grey*, tinged with purple, especially towards the tip; head *reddish*. V, VIII.

Larva orange-coloured, making small blotches in leaves of apple. VII, X, XI.

Brs. ! and Lewisham !

N. OXYACANTHELLA. 2½'''. F.-w. *fuscous tinged with purple*, almost entirely purple beyond the middle; head *deep yellow*. V, VIII.

Larva bright green, making long galleries in leaves of hawthorn. VII, IX, X.

Bi. Brs. !! Da. ! M. Sc. !! and Lewisham !!

N. VISCERELLA. 2½'''. F.-w. of an *olive* tint, posteriorly darker; head *yellowish*, mixed with fuscous. V.

Larva bright green, making contorted blotch-like mines in elm-leaves. IX, X.

Brs. ! Da. and Lewisham !!

N. ANOMALELLA. $2\frac{1}{4}'''$. F.-w. very pale bronze, *a little paler beyond the middle*; the apex dull violet; head yellow, sometimes black. V, VIII.

Larva yellowish. In long slender galleries in rose-leaves. VII, IX, X.

Brs.!! Da. ! M.!! Ne. ! Sc.!! Tn. ! Y. and Lewisham !!

N. CRYPTELLA. $2\frac{1}{4}'''$. F.-w. whitish, *coarsely scaled with dark grey*, sometimes with indications of pale opposite spots beyond the middle; head ochreous, mixed with fuscous. VI.

Larva in blotches. In leaves of *Lotus corniculatus*. VII. M. Sc.!! and Mickleham !!

N. CATHARTICELLA. $2\frac{1}{4}'''$. F.-w. black, with a faint purple tinge, with a *minute white spot* on the inner margin *near the anal angle*. V, VIII.

Larva in rather broad galleries in leaves of *Rhamnus catharticus*. VII, IX, X.

Brs. Y. and Lewisham !!

N. SEPTEMBRELLA. $2'''-2\frac{1}{4}'''$. F.-w. dark grey, with a *rather triangular whitish spot* on the inner margin *beyond the middle*. V, VIII.

Larva making at first linear, and ultimately blotched, mines in leaves of *Hypericum*. VII, IX, X.

Brs.!! Da.!! Lw. M.!! Sc.!! and West Wickham !!

N. INTIMELLA. $3'''$. F.-w. dark fuscous, with a yellowish spot on the inner margin a little beyond the middle; *antennæ yellowish*. VI.

Brs.

N. HEADLEYELLA. $2'''$. F.-w. dark grey, with two small, *whitish silvery*, opposite spots beyond the middle; head yellowish grey. VI, VIII.

Sc. and Mickleham.

N. WEAVERI. $3\frac{1}{4}'''$. F.-w. purplish black, with an *oblique, broad, yellowish spot on the costa before the middle*, and a smaller yellowish white spot on the inner margin at the anal angle. VI.

Larva in blotches in leaves of *Vaccinium Vitis-Idæa*.
IV, V.

M. ! Sc. !! and Rannoch, in Perthshire.

N. SUBBIMACULELLA. 3'''. F.-w. black, with a whitish patch at the base, extending along the inner margin ; a triangular whitish spot in the middle of the costa, and a larger spot beyond it on the inner margin. VI.

Larva pale greenish white, making small blotches in oak-leaves. IX, X.

Bi. Brs. !! Da. !! Lw. ! M. !! Ne. ! Pm. !! Sc. !! Y. and Lewisham !!

N. ARGYROPEZA. 4'''. F.-w. black, with a small whitish spot on the costa rather *before the middle*, and a larger one on the inner margin *beyond the middle*. V.

Larva yellow ; makes a blotch close to the footstalk of leaves of aspen. X.

Brs. !! and near Beckenham.

N. APICELLA. 3'''—3½'''. F.-w. dark grey ; *beyond the middle are two opposite* whitish spots, that on the inner margin the larger. V, VI.

Near Beckenham, and at Woodhead moors.

N. SERICOPEZA. 2½'''. F.-w. blackish, with an oblique whitish fascia before the middle, and two opposite whitish spots beyond the middle. VI.

Brs. and Dartford Heath.

N. TRIMACULELLA. 2½'''. F.-w. dark fuscous, with a *broad whitish basal streak reaching to the middle* ; beyond are two whitish opposite spots. V, VIII.

Larva making broad galleries in leaves of poplar. VII, IX, X.

Brs. !! Da. ! M. Y. and Lewisham !

N. QUINQUELLA. 2½'''. F.-w. black, with *three silvery whitish spots*, one on the costa before the middle, one on the inner margin beyond the middle, and one between it and the apex. VI, VII.

West Wickham Wood, once plentiful.

N. SALICIS. $2\frac{1}{2}'''$ — $3'''$. F.-w. fuscous, slightly dusted with pale yellowish, posteriorly darker and with a faint violet tinge; beyond the middle are *two ill-defined yellowish spots, forming an indistinct oblique fascia*. V, VIII.

Larva yellowish, making small tortuous mines, resembling blotches. In leaves of willow. VII, IX, X.

Bi. Brs.!! Da.!! M.! Sc.!! and Lewisham!!

N. MYRTILLELLA. $2\frac{1}{2}'''$. F.-w. dark fuscous, with an oblique *rather slender whitish fascia* beyond the middle. V, VIII.

Larva in slender tortuous mines in leaves of *Vaccinium Myrtillus*. VII, IX, X.

M.! Sc.!!

N. FLOSLACTELLA. $2\frac{1}{2}'''$ — $3'''$. F.-w. fuscous, *much dusted with yellowish towards the base*; beyond the middle is a *rather oblique yellowish fascia*, beyond which the apical portion of the wing is entirely fuscous, with a faint violet tinge. V, VIII.

Larva yellowish, making broad tortuous galleries in leaves of nut and hornbeam. VII, IX, X.

Bi. Brs.!! Da.!! Lw.! M.!! Ne. Pm.!! Sc.!! Tn.!! Y. and Lewisham!!

N. LUTEELLA. $2\frac{1}{2}'''$. F.-w. dark olive to beyond the middle; considerably beyond the middle is a *nearly straight pale yellowish fascia, often not reaching the costa*. V, VIII.

Larva making long contorted galleries in birch-leaves. VII, IX.

Brs.! Da.! M. Sc.!! and Dartford Heath!

N. IGNOBILELLA. $2\frac{1}{2}'''$. F.-w. *pale golden brown*; beyond the middle is a straight, *yellowish white, slightly shining fascia*; the apex of the wing has a purplish tinge; head reddish. V, VIII.

Larva yellowish, making blotch-shaped mines in leaves of hawthorn. VII, IX.

Brs.! M. Sc. and Lewisham!

N. ARCUATA. $2\frac{1}{2}'''$. F.-w. *black*, with a rather slender central silvery white fascia, which *on the fold is curved a little inwards*; head reddish. V, VIII.

Larva greenish white, making long contorted galleries in leaves of *Potentilla fragariastrum*. VII, IX.

M. Sc. !! and West Wickham.

N. ANGULIFASCIELLA. $2\frac{1}{4}'''$. F.-w. *black*, with two *silvery white spots* in the middle, which frequently unite to form a *slender angulated fascia*; head reddish. VI, VII.

Larva greenish white, making large blotches in leaves of rose. IX, X.

Brs. !! Da. !! M. !! Sc. !! and Lewisham !!

N. ATRICOLLIS. $2\frac{1}{4}'''$ — $2\frac{1}{2}'''$. F.-w. *deep black*; a little beyond the middle is a *yellowish silvery fascia*, *attenuated in the middle and broadest on the inner margin*; head reddish. V, VIII.

Larva greenish white, with head and 2nd seg. blackish; making blotch-like mines in leaves of apple and hawthorn. VII, IX, X.

M. !! and Lewisham !

N. MICROTHERIELLA. $1\frac{1}{4}'''$. F.-w. *fuscous, slightly tinged with purple*, especially towards the tip; beyond the middle is a *slightly oblique, rather slender, whitish fascia*. V, VIII.

Larva in very narrow long galleries in leaves of nut and hornbeam. VII, IX, X.

Brs. !! Da. !! M. !! Ne. !! Sc. !! Y. and Lewisham !!

N. POTERII. $2'''$. F.-w. *pale golden brown*, towards the tip violet; beyond the middle is a *rather broad, straight, pale golden fascia*. VII.

Larva yellow, forming mines, at first slender, but ultimately blotches, in leaves of *Poterium sanguisorba*. VI.

Mickleham !

N. ARGENTIPEDELLA. $3\frac{1}{4}'''$. F.-w. *black*, with a violet gloss; beyond the middle is a *rather broad whitish fascia, sometimes interrupted*; head *black*. V, VI.

Larva greenish white, making dark brown blotches in leaves of birch. IX, X.

Brs. Lw. M. ! Sc. !! Y. and Dartford Heath !



N. ACETOSÆ. 2'''. F.-w. *dull bronzy fuscous*, with a dull violet fascia beyond the middle, followed by a nearly *straight silvery white fascia*; head *fuscous*. V, VIII.

Larva mines a series of concentric circles in leaves of sorrel. VII, IX.

Near Dublin, and Isle of Wight.

N. BETULICOLA. 2'''. F.-w. bronzy brown, the tip purplish brown; *considerably beyond the middle is a whitish fascia*, nearly straight. V, VIII.

Larva yellow, with green dorsal vessel, making a small contorted gallery in leaves of birch. VII, IX, X.

M. ! Mickleham and West Wickham.

N. PLAGICOLELLA. 2'''. F.-w. shining fuscous, with a purple tinge nearly from the base; beyond the middle is a *nearly straight, shining, rather silvery fascia*; head reddish. V, VIII.

Larva making large whitish blotches in leaves of sloe. VII, IX.

Da. ! M. !! Sc. !! and Lewisham !

N. MALELLA. 2'''. F.-w. *dark fuscous*, with a *slightly oblique, almost white*, rather shining fascia beyond the middle; head reddish. V, VIII.

Larva yellow, making long galleries in leaves of wild apple. VII, IX.

Brs. Da. !! M. !! Sc. !! and Lewisham !!

N. TITYBELLA. 2½'''. F.-w. shining fuscous, *tinged with olive*, darker towards the tip; beyond the middle is a *pale golden* rather oblique fascia, with its hinder edge *concave*. V, VIII.

Larva makes rather broad galleries in leaves of beech. VII, IX, X.

Brs. !! Da. !! M. !! Ne. !! Sc. !! and Box Hill !!

N. GLUTINOSÆ. 2½'''. F.-w. *purple brown*, towards the tip violet; beyond the middle is a *yellowish white* rather oblique fascia. V, VIII.

Larva in galleries in leaves of alder. VII, IX.

Da. Sc. !! Y.

N. GRATIOSELLA. 2'''. F.-w. *pale golden brown*, with a nearly straight *bluish silvery fascia* beyond the middle ; tip of the wing violet ; *head black*. V.

Larva yellowish. In leaves of hawthorn. IX.

Brs. M. Sc !! and Lewisham !

N. PRUNETORUM. 2'''. F.-w. *pale bronzy*, with a purple tinge at the base ; in the middle *is a black fascia, followed by a straight rather broad silvery fascia* ; tip of the wing black ; head deep black. V, VIII.

Larva makes first a brown blotch, and then a brownish gallery in leaves of sloe. VII, IX.

M. and Loudwater, Bucks.

N. REGIELLA. 2½'''. F.-w. *pale golden brown*, tinged with purple ; beyond the middle *is a broad ill-defined brassy fascia*, followed by some coppery scales in the deep purple tip of the wing. VI.

Larva yellow, mining in leaves of hawthorn. IX.

M. and Dartford Heath.

N. CONTINUELLA. 2½'''. F.-w. *dull bronzy grey* at the base, shading gradually into *a dark purple fascia in the middle* ; beyond the middle *is a straight, shining, rather slender, silvery fascia*. VI.

Larva making long *dark green* galleries in leaves of birch. IX.

M. ! and Lewisham !

N. ALNETELLA. 2'''—2½'''. F.-w. *deep golden brown*, shading off to a *pale golden brown on the inner margin near the base* ; beyond the middle *is a rather oblique silvery fascia, extremely brilliant* ; tip of the wing purplish black. V, VI.

Larva making long slender galleries in leaves of alder. IX.

Brs. ! Da. M. !! Sc. Y. and Beckenham !!

N. MARGINICOLELLA. 2½''' — 3'''. F.-w. *rich golden brown*, tinged with purple beyond the middle ; the tip of the wing deep purple ; beyond the middle *is a rather oblique*

silvery fascia; head of the ♂ black; of the ♀ reddish. V, VIII.

Larva yellowish, making long mines *at the edges* of the eaves of elm. VII, IX.

Brs. ! Da. M. !! and Lewisham !!

N. AURELLA. 3'''—3½'''. F.-w. *rich golden brown*, tinged with purple beyond the middle; tip of the wing deep violet; beyond the middle is a *nearly straight pale golden fascia*; head reddish. III—VIII.

Larva yellow, making long tortuous galleries in leaves of bramble. I—XII.

Bi. Brs. !! Da. !! Lw. ! M. !! Ne. !! Sc. !! Tn. !! Y. and Lewisham !!

Genus 2. TRIFURCULA.

This only differs, apparently, from the preceding genus in the neuration of the wings.

T. ATRIFRONTILLA. 4'''. F.-w. yellowish white, almost entirely suffused with dark fuscous scales; *head black*. VIII. Lewisham.

T. SQUAMATELLA. 4'''. F.-w. whitish, dusted with grey scales; the costa and inner margin less suffused, *and a slender curved line along the disk uninterruptedly whitish*; head yellowish. VIII.

Brs. and Charlton.

T. IMMUNDELLA. 3½'''—4'''. F.-w. whitish, *dusted with grey scales throughout*; head yellowish, sometimes violet. VII, VIII.

Brs. Da. !! Sc. !! Charlton !! and Airthrey !

T. PULVEROSELLA. 3'''. F.-w. with *coarse, dark, ashy grey scales on a pale ground*; head reddish. V, VI.

Larva yellowish, making large blotches in leaves of wild apple. VI, VII.

Brs. ! Sc. and Lewisham !

Genus 3. BOHEMANNIA.

Imago : antennæ more than half as long as the fore-wings ; hind-wings much broader than in the two preceding genera.

B. QUADRIMACULELLA. $3\frac{1}{4}'''-4'''$. F.-w. purplish coppery, with a pale yellow spot on the inner margin beyond the middle, and another on the costa rather beyond it ; head reddish. VII.

Near Lyndhurst, New Forest.

PTEROPHORINA.

This is a group very easily characterized, but of comparatively very limited extent. In this country we have at present only twenty-nine species, but many more are known on the Continent.

Our twenty-nine species are divided unevenly amongst two genera, for in *Adactyla* we have only one species, in *Pterophorus* twenty-eight.

The essential character of the group is that the fore-wings are slightly or deeply cleft, and that the hind-wings are split almost in their entire length into three distinct feathers ; thus, these insects have received the name of *Plume Moths*.

The larvæ have 16 legs, and are rather hairy. They form no cocoon, but, fastening themselves by the tail to a leaf or stem, they shed their larva-skins and appear in the pupa state. Some of the pupæ are nearly as hairy as the larvæ, others are quite naked. Most of the larvæ feed in the early summer months, and the perfect insects appear rather later ; yet some, as the common *Pterophorus pterodactylus*, are in

the larva state in autumn, and the perfect insects emerge in October, and, hybernating, are met with in the spring.

Genus 1. ADACTYLA.

This is readily distinguished from *Pterophorus* by the undivided wings.

A. BENNETII. 1". F.-w. greyish, more or less tinged with ochreous, with four blackish dots along the fold. VII.

Larva on *Statice limonium*. V.

Isle of Sheppey, and on the Essex coast.

Genus 2. PTEROPHORUS.

Imago: fore-wings with the hind-margin more or less deeply cleft; hind-wings almost divided into three.

P. RHODODACTYLUS. 10'''—11''' . F.-w. dark ochreous, brownish in the middle, with a slender yellowish white fascia before the fissure; third feather of h.-w. whitish at the base, the tip brown. VII, VIII.

Larva in flowers of roses. VI.

Kingsbury and Lewisham.

P. OCHRODACTYLUS. 1"—1" 1''' . F.-w. ochreous, slightly clouded with darker, especially along the costa; the tip of the anterior lobe *produced, pointed*. VI, VII.

Larva in shoots of yarrow. V.

Al. Bi. Brs. Ca. Da. ! L.D. M. Ne. Pm. Sc. Y.

P. ISODACTYLUS. 10'''—11''' . F.-w. dull greyish ochreous, clouded with darker, with a very obscure costal triangle before the fissure; tip of anterior lobe *not produced, scarcely pointed*. VII.

Teignmouth and Orkney.

P. TRIGONODACTYLUS. 10''' — 1" 1''' . F.-w. greyish ochreous, with the costa narrowly brownish, and a *brown costal triangle before the fissure*; a slender pale fascia towards

the hind-margin; third feather of h.-w. with a tuft of black scales from the middle. VI.

Larva in the flower-stems of coltsfoot. III, IV.

Bi. ! Brs. Ca. Da. !! L.D. M.
Ne. Sc. !! Y.



P. ZETTERSTEDTII. $10\frac{1}{2}$ "". Closely allied to the preceding, but darker; the tip of the anterior lobe *less produced*, and the pale fascia *on the second lobe nearer the hind-margin*. VII.

Lynmouth, Devon.

P. ACANTHODACTYLUS. $9''$ — $10\frac{1}{2}''$. F.-w. *reddish brown*, with a dark brown costal triangle before the fissure, followed by a yellowish streak; a slender yellowish fascia near the hind-margin is preceded by a dark blotch on each lobe; third feather of h.-w. with a black tuft beyond the middle. VII, VIII.

Larva on rest-harrow. VI, VII.

Al. Brs. Ca. K. Pm. Sc. Y.

P. PUNCTIDACTYLUS. $8\frac{1}{2}''$ — $10''$. Allied to the preceding, but the ground-colour of the f.-w. *olivaceous*. VII.

Bi. Brs. L.D. Pm. and Farnham.

P. PARVIDACTYLUS. $7''$. F.-w. *brownish*, with two white streaks across the lobes; third feather of h.-w. with a black tuft nearly at the tip. VI, VII.

Larva on *Hieracium pilosella*. V.

Al. Brs. Lw. Pm. Sc. Charlton and Mickleham.

P. HIERACII. $9''$ — $10''$. F.-w. *brown*, with a white spot at the fissure; each lobe intersected by two whitish fasciæ; the hind lobe with a distinct curved white line at the base of the fringes; third feather of h.-w. with a black tuft before the tip. VII, VIII.

Larva on *Hieracium umbellatum*. VI.

Bi. Brs. Da. Ne.

P. PILOSELLÆ. $8\frac{1}{2}'''$ — $9'''$. Very like the preceding, but rather paler; the pale fasciæ less distinct, and a pale line at the base of the fringes of the hind lobe yellowish instead of white; third feather of h.-w. with a black tuft before the tip. VII, VIII.

Larva on Hieracium pilosella. VI.

Ca. Mickleham !!

P. PHÆODACTYLUS. $10'''$ — $11'''$. F.-w. ochreous-brown, with a pale ochreous curved fascia just before the fissure. VII.

Larva on rest-harrow. V, VI.

Al. Ca. Mickleham !

P. BIPUNCTIDACTYLUS. $10'''$. F.-w. greyish brown, paler towards the inner margin, with a black spot before the fissure; costal fringes of the anterior lobe entirely dark. VII.

Al. Bi. ! Brs. Ca. Da. ! K. L.D. Lw. M. Ne. Pm. Sc. ! Y.

P. LOEWII. $9'''$. Closely allied to the preceding, but f.-w. greyer, and the costal cilia white from the middle of the wing to the tip. VIII.

Larva on seeds of Erythræa centaurea. IX, X.

Near Southport, Lancashire.

P. PLAGIODACTYLUS. $9'''$. F.-w. greyish brown, the inner margin paler; the costa beyond the middle clouded with dark brown; before the fissure is a blackish blotch, and in the anterior lobe is a short black streak. VI, VII.

L.D. M.

P. FUSCUS. $10'''$ — $11\frac{1}{2}'''$. F.-w. brownish, darker towards the costa, more ochreous towards the inner margin; before the fissure is a small dark blotch (in the h.-w. the two first feathers are broader and the third is shorter than in *P. pterodactylus*). VI, VII.

Larva on Veronica Chamædrys. V.

Al. Bi. ! Brs. Ca. Da. !! K. Lw. M. Ne. Pm. Sc. Y.

P. LITHODACTYLUS. 11'''—1" 1'''.
F.-w. whitish grey, sometimes with a brownish tinge; a dark blotch posteriorly, edged with whitish before the fissure, and a dark blotch on the costa beyond it; the middle pair of tibiæ much thickened at the end and in the middle. VIIe, VIII.



Larva on Inula dysenterica and Conyza squarrosa. VI e, VII.

Brs. Da. ! Lw. M. Sc. !! Y. ; Lulworth Cove.

P. PTERODACTYLUS. 10'''—1". F.-w. pale brown or pale grey, with a small dark blotch before the fissure; the first two feathers of h.-w. slender, the third feather rather long. IX, X, IV h.

Larva on Convolvulus. VIII, IX.

Al. Bi. !! Brs. Ca. Da. ! K. Lw. Ne. Pm. Sc. Tn. Y.

P. LIENIGIANUS. 9'''. F.-w. greyish ochreous, with an oblique dark streak before the fissure, and two blackish blotches on the costa of the anterior lobe. VII.

Ventnor, Isle of Wight ; Deal.

P. TEPHRADACTYLUS. 10'''. F.-w. whitish, dusted with grey, with some black dots round the apex of the anterior lobe. VII.

Larva on golden-rod. IX—V.

Brs. M. Pm.

P. OSTEODACTYLUS. 9'''—10'''. F.-w. very pale sulphur, with a brown dot before the fissure, and beyond it a pale brownish blotch on the costa. VII.

Brs. L.D. Sc. !!

P. MICRODACTYLUS. 6½'''—8'''. F.-w. pale sulphur, dusted with brownish, with a small brown spot before the fissure, two small brown dots on the costa beyond it, and some brown dots round the tips of both lobes. V, VI.

Larva in the blossom of *Eupatorium cannabinum*. IX, X.
Al. Brs. Ca. Pm. Sc. !!

P. BRACHYDACTYLUS. $9'''-9\frac{1}{2}'''$. F.-w. dark brown, with the costa and fringes spotted with white; h.-w. dark brown, with a white blotch in the fringes of the second feather. VII.

Larva on *Prenanthes purpurea*. V.

Once in Norfolk.

P. GALACTODACTYLUS. $9'''-11'''$. F.-w. white, with two black dots before the fissure, and several black dots round the tips of the lobes. VII.

Larva on burdock. V.

Brs. Ca. K. Pm. Tn.

P. SPILODACTYLUS. $9'''-10'''$. F.-w. whitish, with a grey blotch at the base, and a grey blotch at the fissure; fringes white, spotted with grey. VII.

Larva on *Marrubium vulgare*. V, VI.

Isle of Wight.

P. BALIODACTYLUS. $11'''-1'' 1'''$. F.-w. yellowish white; a blackish line along the costa from near the base to beyond the middle, and a dark brown blotch in the costal fringes. VII.

Brs. Lw. and Mickleham.

P. TETRACTYLUS. $9'''-10'''$. F.-w. whitish, more yellowish towards the costa; the costa of the anterior lobe blackish brown to the tip. VII, VIII.

Larva on thyme. VI, VII.

Al. Brs. Ca. Da. ! L.D. Lw. Ne. Pm. Sc. !! Y.

P. PENTADACTYLUS. $1'' 1'''-1'' 2'''$. F.-w. white, sometimes sparingly dusted with grey; h.-w. entirely white. VI, VII.

Larva on *Convolvulus*. V.

Al. ! Bi. ! Brs. Ca. Da. K. Lw. M. Ne. Pm. Sc. !!
Tn. ! Y.

P. PALUDUM. 6'''—6½'''. F.-w. yellowish brown, with the lobes intersected by two slender whitish fasciæ; third feather of h.-w. with no black tuft. VI.

In the fens of Cambridgeshire.

ALUCITINA.

We now arrive at the concluding group of the Lepidoptera, —a group readily recognized at a glance by each wing being divided almost from the base into six distinct feathers. But one genus is known in this group, and only one species has been detected in Britain. It is a common insect, the larva feeding in the unopened buds of the honeysuckle, and the perfect insect may be often seen on calm evenings by the side of hedges, and hibernates in houses and outhouses. In contrast to the larvæ of the preceding group, those of the ALUCITINA are not at all hairy, and they spin a cocoon in which they change to the pupa state.

Genus ALUCITA.

A. POLYDACTYLA. 6½'''—8'''. F.-w. yellowish grey, with two dark grey bands, obscurely edged with whitish, not continued across the hind-wings, and the outer fascia terminates in a single spot on the costal feather. VIII—X, V h.

Larva in buds of honeysuckle. VI, VII.

Al. ! Bi. ! Brs. Ca. Da. K. L.D. Lw.
M. Ne. Pm. Sc. !! Tn. ! Y.



APPENDIX I.

LIST OF BRITISH LEPIDOPTERA,

WITH THE NAMES USED BY DOUBLEDAY (IN HIS 'SYNONYMIC LIST OF BRITISH LEPIDOPTERA'), AND BY STEPHENS AND BY STANTON (IN THEIR BRITISH MUSEUM CATALOGUES OF BRITISH LEPIDOPTERA) GIVEN AS SYNONYMS.

The names printed in Capitals and Small Capitals are those used in the 'Manual' (the number *following* each species refers to the page where the description will be found; the numbers *preceding* the names of the species are merely consecutive numbers); the names printed in Roman are those used by Doubleday, and those printed in *Italics* are those used by Stephens or Stainton. Whenever a synonym is not given for a species, it appears in the Catalogues of Doubleday, Stephens or Stainton under the same name, or else it is not in their lists at all.

It should be borne in mind that the Doubleday's List here referred to is the first edition (not that recently published), and consequently no Doubledayan synonyms are assigned to the *Crambites*, *Tineina* and *Pterophorina*.

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OURAPTERYX

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APPENDIX II.

The following Latin names of Plants occurring in the volume, their English names are here appended.

<i>Achillea Millefolium</i>	Yarrow
<i>Ægopodium podagraria</i>	Gout-weed
<i>Aira cæspitosa</i>	Turfy Hair Grass
„ <i>canescens</i>	Grey Hair Grass
<i>Angelica sylvestris</i>	Wild Angelica
<i>Anthemis Cotula</i>	Stinking Chamomile
<i>Anthriscus sylvestris</i>	Wild Chervil
<i>Anthyllis</i>	Kidney Vetch; Lady's Finger
<i>Arabis</i>	Rock Cress
<i>Arctostaphylos Uva-ursi</i>	Red Bearberry
<i>Artemisia maritima</i>	Sea Wormwood
„ <i>vulgaris</i>	Mug-wort
<i>Asplenium Ruta-muraria</i>	Wall Rue
<i>Aster Tripolium</i>	Star-wort
<i>Athamanta libanotis</i>	Mountain Spignell
<i>Atriplex</i>	Orache
<i>Avena pratensis</i>	Narrow-leaved Oat Grass
<i>Ballota nigra</i>	Black Fœtid Horehound
<i>Beta maritima</i>	Sea Beet
<i>Betonica officinalis</i>	Wood Betony

<i>Brachypodium sylvaticum</i>	Slender False Brome Grass
<i>Bryonia dioica</i>	Red-berried Bryony
<i>Bunium flexuosum</i>	Common Earth Nut
<i>Callitriche</i>	Water Star-wort
<i>Carex glauca</i>	Glaucous Heath Carex
„ <i>paludosa</i>	Lesser Common Carex
„ <i>paniculata</i>	Greater Panicked Carex
„ <i>riparia</i>	Great Common Carex
<i>Carlina vulgaris</i>	Common Carlina Thistle
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium arvense</i>	Field Chickweed [weed
„ <i>vulgatum</i>	Broad-leaved Mouse-ear Chick-
<i>Chærophylloides</i>	Chervil
<i>Chenopodium</i>	Goose-foot
<i>Chrysanthemum Leucanthem.</i>	Ox-eye Daisy [frage
<i>Chrysosplenium alternifolium</i>	Alternate-leaved Golden Saxi-
<i>Circea lutetiana</i>	Enchanter's Nightshade
<i>Clematis Vitalba</i>	Common Traveller's Joy
<i>Clinopodium vulgare</i>	Wild Basil
<i>Conium maculatum</i>	Common Hemlock
<i>Convolvulus</i>	Bindweed
<i>Conyza squarrosa</i>	Ploughman's Spikenard
<i>Coronilla varia</i>	{ Not a British plant. Sometimes
	{ grown along with Lucerne
<i>Dactylis glomerata</i>	Rough Cock's-foot Grass
<i>Echium vulgare</i>	Viper's Bugloss
<i>Epilobium alsinifolium</i>	Chickweed-leaved Willow-herb
„ <i>angustifolium</i>	Rose-bay Willow-herb
„ <i>hirsutum</i>	Great Hairy Willow-herb
<i>Eriophorum</i>	Cotton Grass
<i>Eryngium maritimum</i>	Sea Holly
<i>Eupatorium Cannabinum</i>	Common Hemp Agrimony
<i>Euphorbia</i>	Spurge
<i>Festuca duriuscula</i>	Hard Fescue Grass
„ <i>ovina</i>	Sheep's Fescue Grass
<i>Galium</i>	Bedstraw
<i>Genista anglica</i>	Needle Greenweed
„ <i>tinctoria</i>	Dyer's Greenweed
<i>Geum urbanum</i>	Common Avena
<i>Hedysarum</i>	Saintfoin

<i>Helianthemum vulgare</i>	Common Sun Cistus
<i>Heracleum Sphondylium</i>	Common Cow Parsnip
<i>Hesperis matronalis</i>	Dame's Violet
<i>Hippophae rhamnoides</i>	Sea Buckthorn
<i>Holcus mollis</i>	Creeping Soft Grass
<i>Hypericum</i>	St. John's-wort
<i>Inula dysenterica</i>	Common Fleabane
<i>Iris foetidissima</i>	Stinking Iris
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Linaria vulgaris</i>	Yellow Toad Flax
<i>Lithospermum</i>	Gromwell
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil
„ <i>major</i>	Greater Bird's-foot Trefoil
<i>Luzula pilosa</i>	Common Wood Hairy Rush
<i>Lychnis diurna</i>	Red Campion
<i>Lysimachia vulgaris</i>	Great Yellow Loose-strife
<i>Medicago</i>	Medick
<i>Myrica Gale</i>	Sweet Gale
<i>Ænanthe crocata</i>	Hemlock Water Dropwort
<i>Origanum</i>	Marjoram
<i>Orobus</i>	Bitter Vetch
<i>Parietaria</i>	Pellitory
<i>Pastinaca sativa</i>	Common Parsnip
<i>Peucedanum</i>	Hog's Fennel
<i>Pimpinella Saxifraga</i>	Common Burnet Saxifrage
<i>Pinus Pinea</i>	Stone Pine
„ <i>sylvestris</i>	Scotch Fir
<i>Plantago maritima</i>	Sea Plantain
<i>Poa aquatica</i>	Reed Meadow Grass
„ <i>trivialis</i>	Rough Stalked Meadow Grass
<i>Polygala</i>	Milk-wort
<i>Polygonum aviculare</i>	Knot Grass
„ <i>Hydropiper</i>	Biting Persicaria
<i>Potamogeton pectinatum</i>	Fennel-leaved Pond-weed
<i>Poterium Sanguisorba</i>	Common Salad Burnet
<i>Prunus Padus</i>	Bird Cherry
<i>Pulmonaria</i>	Lung-wort
<i>Rhamnus catharticus</i>	Buckthorn
<i>Rhinanthus Crista-galli</i>	Common Yellow Rattle
<i>Rosa spinosissima</i>	Burnet Rose

<i>Rumex acetosella</i>	Sheep's Sorrel
<i>Salsola</i>	Salt-wort
<i>Saxifraga granulata</i>	White Meadow Saxifrage
„ <i>hypnoides</i>	Mossy Saxifrage
<i>Scabiosa Columbaria</i>	Small Scabious
„ <i>succisa</i>	Devil's-bit Scabious
<i>Schænus nigricans</i>	Black Bog Rush
<i>Scirpus lacustris</i>	Bull Rush
<i>Scolopendrium vulgare</i>	Hart's-tongue
<i>Scutellaria galericulata</i>	Common Skull-cap
<i>Sedum acre</i>	Biting Stonecrop
„ <i>Telephium</i>	Orpine
<i>Sesleria cærulea</i>	Blue Moor Grass
<i>Silene inflata</i>	Bladder Campion
„ <i>maritima</i>	Sea Campion
<i>Solanum Dulcamara</i>	Woody Nightshade
<i>Sparganium</i>	Bur Reed
<i>Spiræa Filipendula</i>	Common Dropwort
<i>Stachys arvensis</i>	Corn Wound-wort
„ <i>sylvatica</i>	Hedge Wound-wort
<i>Statice armeria</i>	Common Thrift
<i>Stellaria Holostea</i>	Greater Stitch-wort
„ <i>uliginosa</i>	Bog Stitch-wort
<i>Stratiotes</i>	Water Aloe
<i>Torilis Anthriscus</i>	Upright Hedge Parsley
<i>Typha latifolia</i>	Reed Mace
<i>Vaccinium Myrtillus</i>	Bilberry
„ <i>Oxycoccus</i>	Cranberry
„ <i>Vitis-Idæa</i>	Cowberry
<i>Veronica Chamædrys</i>	Germander Speedwell
<i>Viburnum Lantana</i>	Mealy Guelder Rose
<i>Vicia sepium</i>	Bush Vetch