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ILLUSTRATIONS

OF

BRITISH ENTOMOLOGY;

OR, A

Synopsis of Indigenous Insects:

CONTAINING

THEIR GENERIC AND SPECIFIC DISTINCTIONS;

WITH

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

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BY JAMES FRANCIS STEPHENS, F.L.S.

MEMBER OF THE ZOOLOGICAL SOCIETY, ETC.

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

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HAUSTELLATA.

VOL. I.

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

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

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## ILLUSTRATIONS

OF

## BRITISH ENTOMOLOGY.

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“ Say who can paint  
Like Nature? Can imagination boast,  
Amid her gay creation, hues like these?”

*Thomson.*

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SUCH is the language of one whose works abound in imagery drawn from the beauties of the visible world, and peculiarly applicable to various insects belonging to the subclass upon whose description I am now entering; not, however, that I conceive the productions of these prolific isles to be of a particularly resplendent character; but what art can equal the brilliant silvery blue of the beautiful and lovely *Polyommatus Adonis*—the iridescent purple splendour of *Lycæna Chryseis*—the fiery and almost dazzling cupreous wings of *Lycæna dispar* and *Virgaureæ*—the imperial purple plumes of *Apatura Iris*—the gorgeous silver spots, streaks, and fasciæ of the *Argynni*—or the elegant metallic cilia and markings of various groups of *Tinæidæ*? whose wings may truly be said to be

“ With silver fringed, and freckled o'er with gold.”

—Again, the fine and gaudy colouring of the tiger moths, as they are commonly called—and the singularly delicate pencilling on the under surface of the wings of *Cynthia Cardui*, and *Vanessa Atalanta*, and on the upper surface of those of many *Geometridæ*, are, equally with the more glittering colours, beyond the utmost reach of the pictorial art.

I shall now proceed with my descriptions of the

HAUSTELLATA, *Clairville*,

which, like the *Mandibulata*, I also consider divisible into seven orders; thus briefly characterized:

HAUSTELLATA, VOL. I. 1 JUNE, 1827.

B

<i>Alæ quatuor,</i>	$\left\{ \begin{array}{l} \text{haud squamosæ: } \textit{Corpus} \\ \text{squamæ imbricatæ:} \end{array} \right.$	$\left\{ \begin{array}{l} \text{depressum:} \\ \text{elevatum:} \end{array} \right.$	13. HEMIPTERA.
			14. HOMOPTERA.
<i>Alæ duo: Caput</i>	$\left\{ \begin{array}{l} \text{discretum:} \\ \text{scissile:} \end{array} \right.$		8. LEPIDOPTERA.
<i>Alæ nullæ: Corpus</i>	$\left\{ \begin{array}{l} \text{compressum:} \\ \text{depressum:} \end{array} \right.$		10. HOMALOPTERA.
			12. APTERA.

These appear to be connected together in affinity as above disposed, and, like the Mandibulata, the series “returns into itself,” though the actual point of union between the orders is not always very evident. I noticed, when speaking of insects in general, that the conterminous orders of the two subclasses possessed several characters in common, and that the Trichoptera were so closely allied to the Lepidoptera, from the imperfection of their oral organs, &c. that authors differed as to which of the subclasses the former absolutely belonged: now as the broad expansive wings of these insects are not only furnished with nervures, closely resembling in their branching those of the Lepidoptera, but are moreover clothed with hair or down, and as they have several other general characters, such as the location of the legs—the elongated coxæ—the calcaria, or spurs, I conclude that in a naturally arranged series we must pass directly from this group of mandibular insects to the beautiful

#### ORDER VIII.—LEPIDOPTERA.

Whose characters are, wings four \*, membranaceous, more or less clothed with imbricated scales: mouth furnished with a spiral, filiform tongue: body hairy: prothorax adorned with a pair of tippets: metamorphosis obtected.

The larvæ of this order are generally known by the name of caterpillars: they are usually elongate, nearly cylindric, soft, of various colours, naked or clothed with hair, and sometimes armed with spines, or tubercles: the head is covered with a hard scaly skin, and is furnished with two very short conical antennæ, and two shining eyes: the mouth is provided with two strong mandibles and two maxillæ: a lip and four small palpi: the three first segments of the body bear each a pair of horny legs, which are the true legs, and correspond with those of the perfect insect: the false, or prolegs, are membranaceous, they vary in number from four to ten, but, with a few exceptions (as in *Cerura*, *Stauropus*, &c.) the last pair is situated on the anal segment of the body.

\* The females of *Orgyia*, *Cheimatobia*, *Lampetia*, &c. are destitute of wings: in *Ægeria*, *Prochilum*, *Sesia*, *Nudaria*, &c. the wings are not fully clothed with scales. *Aglossa*, as its name implies, wants the tongue.



The principal nourishment of most caterpillars consists of the leaves of vegetables: others devour flowers, roots, seeds, buds, and even perforate and subsist on the solid wood of trees; many are exceedingly destructive to our domestic articles, and destroy skins and woollen stuffs, while some feed on leather, grease, lard, &c., and spare not even our honied stores: several live on one substance alone, while many attack various plants and substances, and even devour each other; but as a recompense for the destructive properties of some, others are kindly provided by the fostering hand of Providence with qualities whose produce gives employment to millions of human beings,—and some are kept within due bounds by the hosts of Ichneumonidæ and Chalcididæ.

Caterpillars usually change their skin four times previously to passing to their pupa or chrysalis state; and they are in general furnished with an apparatus for spinning silk, with which they either line the cells wherein they undergo their changes, or suspend themselves preparatory to that event: these cells are variously constructed in the different groups, and as I proceed I shall notice their diversified structure under their respective genera.

In the generic distribution of the contents of this truly elegant order of insects, I may confidently assert that I have hitherto laboured without other assistance than that derived from the still-incomplete work of the lamented Oechsenheimer, no one in this country, till recently, having devoted their attention to this department of the science beyond the mere capture and investigation of the species and their varieties. I consequently fear that my limited knowledge of exotic forms may occasionally betray me into the venial error of proposing genera upon characters, which may be so moderated by intervening extra-indigenous forms, as to be deemed of no importance when compared with their congeners;—but those individuals, who maintain that genera are unimportant, and lead to no practical use, when new species with connecting characters are discovered, might with equal propriety deny the presence of salt in the ocean, because the sources of rivers are fresh, and the actual point where the saline impregnation commences cannot be ascertained, owing to the very gradual manner in which it is incorporated with the water. I do not, however, here intend to advocate the expediency of adding to the vast numbers of modern genera, which it appears necessary to adopt; though, were I disposed to vindicate the propriety of forming them, or of adding to those of Linné,—

which the disciples of that truly celebrated man affirm are fully adequate to meet all our wants in *secula seculorum!*—I might adduce, as powerful arguments, the present overwhelming numbers of species which would be contained in several of his genera, agreeably to the principles of his followers; and as illustrations of my position, I might state that of the diurnal Lepidoptera, or Linné's genus *Papilio*, 2400 species are said to be actually preserved in the imperial cabinet at Vienna:—again, I should speak within compass were I to assert that the genus *Carabus* would consist of upwards of 1600 species,—*Cureulio* of 2000,—*Scarabæus* 2000,—*Staphylinus* 1000,—*Musca* 4000,—*Phalæna* considerably above 5000!!—*Ichneumon* probably as many, or even double the number, as the species of this group are known to attack several insects, besides Lepidoptera,—exclusively of the host of species which would be comprised in the three genera of *Chrysomela*, *Cimex*, and *Tipula*,—thus comprehending, in about a dozen genera, at least one-fourth of the insects reputed \* at present to be preserved in collections, whose habits, structure, and metamorphoses present numerous discrepancies;—a procedure that nothing short of the most persevering apathy or inflexible prejudice can justify: but I rejoice to say that a more liberal spirit has recently sprung up, and that the opposition to the modern innovations, as the progress of natural science is illiberally styled, is rapidly subsiding, from the numerous important discoveries of late years, and the insufficiency of the Linnæan classification to meet the wants of the student in his attempts to arrange his materials in conformity therewith.

The first division of the Lepidoptera, or the  
*DIURNA of Latreille,*

Correspond with the genus *PAPILIO* of Linné, and are characterized by having the antennæ composed of very numerous articulations, approximating and slender at the base, towards the tip gradually incrassated and formed into a club, which is sometimes abruptly truncate, and occasionally somewhat setaceous, with the extreme tip hooked: the wings are generally placed erect when the insect is at rest: but in the *Hesperidæ* the hinder wings only are elevated. They all fly by day: their larvæ have invariably sixteen legs: the pupa, or chrysalis, is generally naked, frequently angulated, and always attached by its tail.

\* Mr. MacLeay says, that 100,000 species are to be found in our cabinets.—*Hortæ Entomologiæ*, v. 1. p. 469.—Mr. Kirby estimates the number of insects to exceed 100,000.—*Kirby and Spence's Introd. to Ent.* v. 1, p. 177.

It is perhaps futile to attempt a natural arrangement of this section of Lepidoptera, from the very scanty materials supplied by these islands; but as an approximation to the truth is doubtless better than positive confusion, I shall dispose my subjects in some measure agreeably to the classification proposed by Mr. Swainson, in the Philosophical Magazine for March last, as that is decidedly the most efficient published arrangement of this group of insects I have yet seen, and if my views of it be correct, the subordinate divisions do not materially differ from the method in which the indigenous species have been usually disposed: yet, as his principal characters are drawn from the metamorphoses—which evidently point out the most natural groups—I have not ventured to follow him, as they are frequently unknown to the naturalist, and it is my intention in this work to furnish the student with the means of ascertaining the nomenclature and history of all our insects, by an inspection of them in their final state; I have consequently used other characters for my primary divisions, and have considered those which are drawn from the larva, or pupa, as subsidiary.

<i>Pedes antici</i> haud abbreviati: <i>Antennæ</i>	{ apice abrupte uncinato: . . . haud apice uncinato: . . . { mediocres, bifidi: . . . { minuti, simplices: . . .	4. HESPERIDÆ.
<i>Pedes antici</i> plus minusve abbreviati: <i>Ungues</i>		1. PAPILIONIDÆ. 2. NYMPHALIDÆ. 3. LYCENIDÆ.

### FAMILY I.—PAPILIONIDÆ\*.

*Antennæ* with a distinct club, varying in form and sometimes compressed, but never hooked at the extremity; *legs* in both sexes all formed for walking, and distinctly furnished with simple, or bifid, claws: *hinder tibiæ* with one pair of spurs at the tip only: *hinder wings* excised to admit the free motion of the abdomen, or grooved to receive it. *Larva* generally naked: *pupa* fastened by a transverse thread, or subfoliculated, angulated or smooth.

\* In the following account of the papilionaceous insects of Britain, all the dubious species which have been introduced into our Fauna will be briefly enumerated in their respective locations, with the authorities for their introduction so far as I have ascertained them; and the characters of those genera of which no truly indigenous species occur are printed in italics in the tabular views.—It is also requisite to apprise the student that the brief primary characters, by which the minor divisions are separated in the tables, must be cautiously employed, as in the conterminous groups of a natural series they become so gradually blended into each other, as to apply without much difficulty to either.

<i>Antennæ capitulo haud compresso:</i>	<i>Alæ posticæ</i>	{	angulatæ:	<i>Antennæ</i>	{	clongatæ:	1. PAPILIO.
			rotundatæ:			breves:	2. GONEPTERYX.
<i>Antennæ capitulo compresso:</i>	<i>Alæ</i>	{	denudatæ:	omnes	{	squamis tectæ:	3. COLIAS.
						denudatæ:	7. DORITIS.
			squamis tectæ, <i>primorcs</i>	{	trigonæ:	4. PONTIA.	
					subovales:	5. LEUCOPHASIA.	

GENUS I.—PAPILIO of *Authors*.

*Antennæ* with its capitulum somewhat arcuate, ovate-conic: *palpi* very short, scarcely reaching to the clypeus, not prominent; the two first joints of equal length; the third minute, nearly obsolete: *tarsi* with distinct and simple *claws*. *Anterior* wings subfalcate; *posterior* tailed; the inner margin cut out to receive the abdomen. Caterpillars fleshy, furnished on the neck with a furcate, retractile, organ. Chrysalis angulated, with two processes before, fastened by a transverse thread.

Sp. 1. Machaon. *Alis subdentatis, concoloribus flavis, margine nigro, limbo fusco lunulis flavis; posticis caudatis maculis sæcæruleis, ocelloque anali ferruginco.* (Expansio alarum 3 unciæ —3 unc. 7½ linia.)

Papilio Machaon. *Linné.—Lewin. pl. 34.—Steph. Catalogue.*

This elegant and conspicuous insect varies considerably in size: its upper wings above are yellow, with four black spots, of which the outer one is nearly round and smaller, the two next transverse and parallel to each other, the fourth is of a triangular form and occupies the entire base of the wing, this last is irrorated or spotted with yellow: the costa itself and the nervures, which are much dilated, are black: the hinder margin is black irrorated with yellow, and adorned with eight lunulated spots of the same colour; the margin itself is a little dentated and yellow, interrupted with black. The under wings are strongly dentate and tailed: their ground colour is yellow, the inner margin is black sprinkled with yellow, the nervures are dilated, especially the one which forms the apical outline of the discoidal cell: the marginal fascia occupies above one-third of the wing, and is black irrorated with yellow, and ornamented with six subocellated cærulean spots, and outwardly with six broad yellow lunules, the four intermediate ones being the largest; the exterior margin is yellow interrupted with black: the anal angle bears a

Sp. 2. Podalirius. *Alis flavescentibus fuscis nigris; posticis caudatis apice nigro lunulis marginalibus cæruleis, subtus strigâ rufescente.* (Exp. alar. 3—3½ unc.)

Pap. Podalirius. *Linné.—Don. IV. pl. 109.—Steph. Catal.*

Anterior wings entire, above yellowish, with the costa and six transverse bands and the hinder margin black, the third and fifth of which are abbreviated,

round ferruginous spot, which is nearly surrounded with black, with a blue lunule towards the base of the wing, and an elongated, triangular yellow spot towards the tip: the tail is black, linear, and edged internally on each side with yellow. The under surface of the wings much resembles the upper, but is paler, and the lunules on the superior wings are converted to a continuous yellowish band; the marginal fascia is also so strongly irrorated with yellow as to appear entirely of that colour. The inferior wings have the blue spots narrower, more lunulated and distinct, and the fasciæ in which they are placed is, like that of the superior wings, nearly yellow; the four lunular spots of the upper surface on the edge exterior to the tail are replaced by others of a quadrate form: towards the centre of the wing are two or three, more or less evidently defined, triangular reddish spots, and one in the quadrate marginal spot near the anterior edge of the wing; the nervures are much more dilated than on the upper surface; but the ocellated anal spot and tail are nearly similar to those of the upper surface. The body is yellow, with two lines beneath, and the back black: the antennæ are black: the legs black, with yellow hairs.

The lunules on the margin of the inferior wings are frequently marked with red or fulvous; and there is often one or more round black spots placed between the dilated veins at the tip of the superior wings.

The caterpillar is smooth, green, with velvety black rings, alternately spotted with ferruginous: the organ with which it is armed on the top of the neck is of a red colour; it secretes an acrid liquor, which emits an unpleasant smell, particularly when the animal is irritated, by which it keeps the ichneumons at a distance. It feeds solitarily on umbelliferous plants, especially on the fennel and carrot, the flowers of which it prefers. About July it changes to the chrysalis, which is greenish, with a longitudinal black band on each side.

*P. Machaon* is not an uncommon English insect, especially in the fenny counties of Huntingdon and Cambridge, in some parts

and the fourth is sometimes partially divided by a pale dash. The posterior wings are much dentated, and have a long tail: yellowish on both sides, with two or three subparallel strigæ, of which the first is broadest, and occupies the inner or abdominal margin; the next is sometimes united thereto, and the last is placed in the middle: the margin on both sides is dusky, with four bluish and two yellow lunules, and at the anal angle is a fulvous spot, bearing a black patch and a bluish lunule: the wing beneath has four strigæ, with a reddish line between the second and third: the tail is black, with its inner edge and tip yellow: the abdomen is yellowish, with the back and a double row of spots beneath black: the antennæ are black.

The larva is solitary, and feeds on the various kinds of brassica; it is of a bright green, with a whitish dorsal line, and two others immediately above the legs, and on each side are oblique whitish lines, which commence from the second segment, and are spotted with red: the head is round, deeply immersed in

of which it occurs in the utmost profusion. It is generally supposed that there are two broods in the year, one in May, the other in August; but from the observations of my deceased friend, E. Blunt, Esq., I presume that supposition is inaccurate, as he informed me that he had taken the larvæ in all its stages at one time, and that the perfect insect continued to make its appearance with regularity from the end of May to the middle of August; but as these larvæ were taken at large, and in various places, it is probable that some fortuitous circumstances might have caused the appearance of some of them to be procrastinated. The perfect insect flies with rapidity, and is difficult to catch, unless in perfectly calm weather: it has sometimes been captured close to London, in Epping Forest, at Stepney, and near Peckham; and it was formerly abundant at Westerham, in Kent. Mr. Dale has frequently taken it at Glanville's Wooton, and in other parts of Dorsetshire: it also occurs as far north as Beverley, in Yorkshire, and west as Redlane, near Bristol, in Somersetshire.

## GENUS II.—GONEPTERYX, *Leach*.

*Antennæ* short, stout, very gradually thickening into an obconic club: *palpi* short, much compressed, the terminal joint very short: *wings* angulated, large, the *posterior* grooved to receive the abdomen: *legs* alike in both sexes, short, stout; *claws* minute, bifid. Caterpillar naked. Chrysalis angulated, acuminate in front: fastened with a loose thread round its middle.

Sp. 1. Rhamni. *Alis flavis scu virescenti-albidis; singulis puncto medio suprâ fulvo, subtus occlari.* (Exp. alar. 2 unc. 3—6 lin.)

Papilio Rhamni. *Linné.—Don. V. pl. 145.—Steph. Catal.*

the neck, which bears a red tentacule with a yellow tip: the pupa is yellowish, dotted with brown, and slightly bidentate before.

This insect appears to have been introduced into the British Fauna upon the most loose and unsatisfactory authority. Its introduction by modern authors arose from the following words of the celebrated Ray: "Prope Libernam, portum in Etruria, invenimus, at etiam, *ni male memini, in Anglia.*"—*Ray. Ins. p. 111*: and from the expression of Berkenhout, who says, in his Outlines, that it is "rare in woods." Now, as the attention of entomologists has been so especially drawn towards the solution of this point for at least forty years, and no *authentic* instance of its capture is recorded, it seems absurd to consider it any longer as a British species; but, notwithstanding, there are several entomologists sanguine enough to expect that it may eventually occur in some of the unexplored parts of the country; although its highest northern range on the Continent appears to be about the latitude of Paris.

Above, the male is sulphur-yellow and the female greenish-white, with a dusky spot at the base of the wings, and an orange or fulvous spot in the centre, and obsolete ferruginous dots on the margin, especially on the anterior costa: beneath, the male is greenish, the female paler, and the discoidal spot on all the wings is whitish in the centre, with a ferruginous margin: the abdomen is black above and yellow beneath; its base and the thorax thickly clothed with long glossy white silken hairs: the legs are white: the antennæ are reddish; at the base of the latter is an elevated reddish tuft of scales.

† Var. *β*. With the wings clouded, and minutely dotted and streaked with orange or fulvous.—*Curtis*, iv. *pl.* 173. This variety is in the rich lepidopterous collection of Mr. Haworth.

The caterpillar is green, with a paler line on each side of the belly, and very small scale-like black dots on the back, which give that part a bluish aspect: the fore part of the body is thick and rounded, the hind part compressed. It feeds upon the *Rhamnus catharticus* (or buckthorn), and the *Rh. frangulus* (or berry-bearing alder); and is said to occupy three or four days in changing to the pupa state: the pupa, or chrysalis, is very gibbous in the middle, acuminate before, and green with a clearer line on each side, and a reddish or fulvous spot in the middle: it is vertically suspended on a perpendicular branch, with a loose silken thread round its middle:—the perfect insect is produced in about fifteen days.

This gay and lively-coloured insect is apparently double-brooded, the first brood appearing about June; the second in the autumn, and of the latter many individuals of both sexes remain throughout the winter, and make their reappearance on the first sunny day in spring. I have seen them sometimes so early as the middle of February: they frequent woods, commons, meadows, and lanes, and appear to be pretty generally diffused throughout the country; their flight is rather slow than otherwise.

### GENUS III.—COLIAS, *Fabricius*.

*Antennæ* short, rather slender, filiform at the base, towards the tip gradually thickening into an obconic club: *palpi* short, much compressed, the terminal joint shortest: *anterior wings* somewhat trigonate, *posterior* rounded, with a groove to receive the abdomen: *legs* alike in both sexes, moderate, slender: *claws* small, weak, bifid. Caterpillar naked, tuberculated. Chrysalis sub-angulated, gibbous, slightly acuminate in front, fastened by a transverse thread.

Several papilionaceous insects are remarkable for their periodical or irregular appearance, and none more conspicuously so than the insects of this genus. The cause of this interesting phenomenon appears inexplicable: its solution has baffled the inquiries of entomologists, and several speculative opinions have been advanced

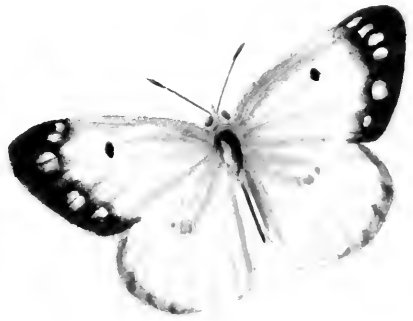
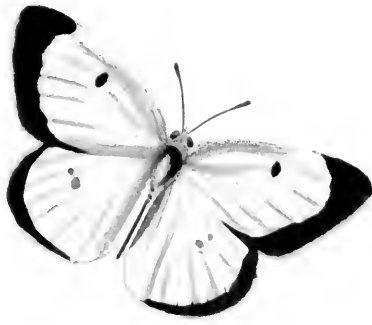
thereon. By some persons their sudden increase has been attributed to the previous failure of their natural enemies, the Ichneumons and the soft-billed birds—by others to an increased temperature; others again suppose that their eggs lie dormant till called into life and vigour by some extraordinary latent coincidences. But all these opinions are mere conjecture, and they do not sufficiently clear up the difficulty; which is rendered more obscure from the fact that several of the insects, especially *Cynthia Cardui*, appear constantly in some parts, and periodically in others. The *Coliades* are particularly gay and showy insects; they are eminently distinguished by the brilliant tints of orange and yellow with which their wings are adorned: they are of moderate size, and usually appear in their final state towards the autumn.

Sp. 1. Europome. PLATE I. \* f. 1, ♂—f. 2, 3, ♀.—*Alis supra sulphureo-flavis, limbo communi nigro* (in fœm. *flavo maculato*); *anticis utrinque puncto medio nigro infra ocellari, posticis subtus puncto sesquialtero argenteo.* (Exp. alar. 2 unc.—2 unc. 2 lin.)  
 Papilio Europome. *Huzcorth.*—Co. Europome. *Steph. Catal.*

Both sexes of this fine insect—which greatly resembles Co. *Philodoce* (a Virginian species)—are of a fine sulphureous yellow above: the male has the hinder margins of both wings deeply edged with black, an ovate spot of that colour on the disc of the anterior, and an obsolete fulvous spot on that of the posterior; the border on the latter is irregularly sinuated within: beneath the anterior wings are paler, with the tips rather deeper, the discoidal spot is whiter, with a black or dusky iris; and parallel with the hinder margin is a very obsolete row of dusky spots: the posterior wings are of a deeper yellow, minutely irrorated with black, with a discoidal silvery ocellus, having a fulvescent iris, and a secondary silver spot adjacent; they have also an obsolete row of dusky spots parallel with the hinder margin, and forming a continuous series with those of the anterior wings, and a larger somewhat triangular fulvescent spot on the upper edge. The female differs in having the black border of the hinder margin of the anterior wings irregularly spotted with yellow, and in wanting the border to the posterior wings, having in its place some obsolete subtriangular dusky spots. Both sexes have the extreme edge, both above and below, and the cilia, rose colour.

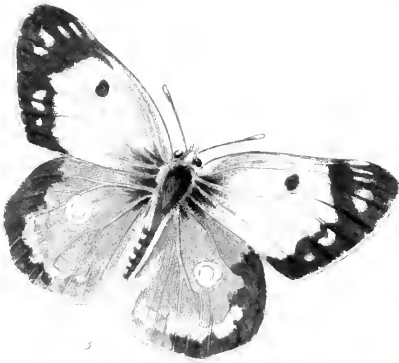
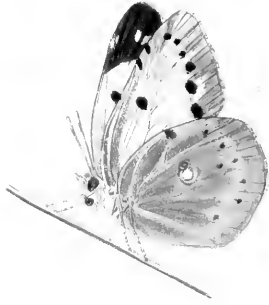
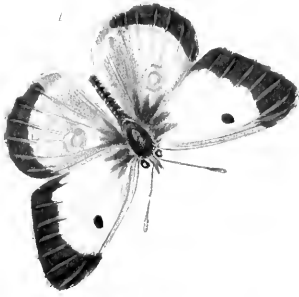
Very few British cabinets contain this interesting species, which, till last summer, does not appear to have been captured in England for upwards of forty years. I have hitherto seen but five specimens, four of which were in the rich collection of the late Mr. Francillon, and one in that of the late Mr. Marsham: of these I have been fortunate enough to obtain three, two males and a











female, from which the accompanying figures have been taken. In Lepidoptera Britannica reference is also made to the collection of Mr. Swainson as possessing this species. The past season afforded no less than eight examples—thus illustrating the irregular appearance of the Coliades—four of which were captured between Brighton and Lewes, in Sussex; and a similar number in the vicinity of York, as I am informed by Mr. Cooper;—these last were found in September—the others in company with *Co. Hyale* and *Edusa*.

Since writing the above, I find, by the Butterfly-Collector's *Vade-Mecum*, that this species is said to occur, though rarely, in the meadows and road sides near Ipswich, in Suffolk, in the middle of August.

Sp. 2. *Chrysotheme*. PLATE II. \* f. 1. ♂ . f. 2. ♀ .—*Alis supra fulvo-lutescentibus, limbo communi nigro* (in fœm. *flavo maculato*); *anticis utrinque puncto medio nigro infra ocellari, posticis subtus virescentibus puncto sesquialtero argenteo*. (Exp. alar. 1 unc. 8 lin.—1 unc. 10 lin.)

*Papilio Chrysotheme*. *Esper.*—*Co. Chrysotheme*. *Steph. Catal.*

Distinguished at first sight from the other indigenous species by its inferior size, and from *Co. Edusa* by its paler colour. Its resemblance to the latter insect is almost too close, but its constancy and locality appear to sanction the propriety of considering it as a distinct species: its chief differences from that insect consist in its smaller size, the rotundity of the hinder margin of the anterior wings, its paler colour, the dissimilar form of the marginal fascia, the expanded duskiess at the base of the wings, especially of the posterior, and the black discoidal spot on the under surface of the anterior wings being pale in the middle, as in *Co. Europome* §.

† Sp. 1. b. *Palæno*. *Alis flavis, apice nigris margineque fulvis: posticis subtus puncto argenteo*. Linné.

*Pa. Palæno*. Linné.—*Martyn*.

Wings yellowish, or white, with the exterior margins red; the superior above with a broad black apical margin, and on both surfaces with a black spot; the posterior wings beneath cinerascens, with a lunate silvery spot, and the base red.

According to Linné, this species feeds upon various kinds of fern (*Pteris*). The insect occurs in many parts of Europe, from Lapland to Switzerland, in July; its introduction into the British list originated with Martyn, who enumerates it in his *Aurelian's Vade-Mecum*, I imagine by mistake, for *Co. Hyale*, or one of the kindred species.

§ This last character is unfortunately omitted in some impressions of figure 2; which represents the under side of the female rather larger than nature.

The caterpillar and chrysalis of this species hitherto remain unknown: the male, from which the accompanying figure was taken, was captured in company with several other specimens by H. Sims, Esq. in September 1811, either in the county of Norfolk or near Epping in Essex: the female I obtained from some other, but unknown, source: there are specimens of this species in the collection at the British Museum, and in that of Mr. Haworth.

I believe the first notice of this insect as a species occurs in Bergstraesser's Nomenclature, where a figure is given; and subsequent continental lepidopterists have unhesitatingly described it as a distinct species from *Co. Edusa*, its nearest congener in Britain; and it is from a firm conviction of the accuracy of their views that I have followed their steps, and introduced a figure and description of it for the first time in an English dress:—but as I am fully aware of the laudable caution with which many entomologists of this country acknowledge the specific distinctions of insects which they have not had an opportunity of examining, I anticipate a difference of opinion upon this point.

Sp. 3. *Edusa*. *Alis suprà fulvo-croccis, limbo communi nigro* (in foem. *flavo maculato*); *anticis utrinque puncto medio atro; posticis infrà sub-virescentibus puncto sesquialtero argenteo*. (Exp. alar. 1 unc. 10 lin.—2 unc. 5 lin.)

Pa. *Edusa*. *Fabricius*.—*Don*. vii. *pl.* 238, *f.* 2. ♀.—Pa. *Hyale*. *Don*. ii. *pl.* 43. ♂.—*Co. Edusa*. *Steph. Catal.*

The male of this elegant insect has the anterior wings above deep bright fulvous-orange, with a broad black internally-waved band on their outer edge, and a large round deep black spot in the middle; beneath the disc is pale fulvous, with a black, ino-cellated dot, and the tip greenish: the posterior wings are fulvous above, with a narrow black border on the outer edge, a greenish tinge on the inner, and a deep fulvescent but obsolete spot in the middle: beneath, they are greenish with a subocellated silver spot in the middle, accompanied by a smaller one, both with a rust-coloured iris. The female differs in having a series of irregular yellow spots in the black margin of the anterior wings, and by having the border on the posterior wings very obsoletely defined internally. Both sexes have a row of spots parallel with the edge of the hinder margins of both wings, of which three or four of those on the anterior wings are deep black, and the rest ferruginous: the cilia are yellow above, interrupted with red-brown, and rose-coloured beneath: the body is yellowish-green, with the back dusky: the antennæ reddish, with the tip of the club reddish-yellow.

This insect varies much in the intensity of the colour of the marginal band: in

some specimens this is jet black, in others brownish, and in general the nervures which pass through it are yellow: the posterior wings are sometimes beautifully iridescent, and the ground colour of the anterior is occasionally of a yellowish tint.

Var.  $\beta$ . PLATE II.\* f. 3. ♀.—This variety (which is the Pa. Helice, *Haworth*) differs from the female solely by having the ground-colour of the wings, as well as the series of irregular dots in the marginal band, yellowish-white.

Var.  $\gamma$ . Very small: with the anterior wings subfalcate, but coloured as in var.  $\alpha$ . (Exp. alar. 1 unc. 8 lin.)

The caterpillar feeds on grasses: it is deep green with a longitudinal white stripe on each side, spotted with yellow and blue: the chrysalis is green, with a yellow line on each side, and black spots on the wing-cases.

Not uncommon during the autumn, in certain but indeterminate years, in the south of England; but apparently rare in Cambridge-shire and Norfolk, the southern parts of which counties it appears only to frequent. I have often taken it in Battersea-fields, and at Dover and Brighton: near the last place it appears to occur in the greatest plenty.

Sp. 4. Hyale. *Alis supra pallidè sulphureis, limbo communi nigro, flavo-maculato; anticis utrinque puncto medio nigro, posticis subtùs luteis, puncto sesquialtero argenteo.* (Exp. alar. 2 unc.—2 unc. 2 lin.)

Papilio Hyale. *Linné.*—*Don.* vii. pl. 238, f. 1. ♂.—Co. Hyale. *Staph. Catal.*

The upper surface of this interesting species is sulphur-yellow or whitish, with a deep black spot in the middle of the anterior wings, and a pale orange spot in the disc of the posterior: the anterior wings have a black border, widest towards the costa, and with an interrupted row of yellowish or whitish spots; the posterior wings are also bordered in the female, but in the male this border is replaced by one of yellow: the under surface of the anterior wings is whitish-yellow, but not bordered with black; the tip is orange-yellow, with its outer edge pale red, and a transverse row of dusky spots on its inner: in the centre is a round black spot: the posterior wings are entirely orange-yellow, with a row of dusky reddish spots, towards the margin, and with two silvery spots in the centre, which correspond with the spot in the upper surface, and are bordered with reddish: the wings are all ciliated with yellowish red: the body is yellow: the head and the front of the thorax and the legs are ferruginous: the back dusky: the antennæ reddish.

The female differs in being whitish. A variety is described by Lewin, in which the wings of the male are whitish, and of the female white.

The caterpillar is velvety-green, with two yellowish lateral lines, and black spots on the annuli: it feeds on papilionaceous plants: the chrysalis is green, with a yellow lateral line.

Of this rare British species I have seen very few specimens, and, until the last season, only three recent captures had come to my knowledge. The first of these was found in August, 1811, at Wrentham, in Suffolk, by the very ingenious and able artist to whose accurate pencil I am indebted for the figures with which this work is embellished, and is in his brother's collection; the second specimen was taken about eight years ago in Epping Forest, in June, and the third subsequently near Brighton: but last season many specimens were captured near the last named place by a person residing in that town. It is said to be double-brooded, and the first brood to appear in June, and the latter towards the autumn. It is found in meadows. The county of Kent has produced the greatest number of specimens: Lewin found them not uncommonly near Queenborough and Ospringe in the autumn. Mr. Haworth informs me, that it has been captured near Halvergate, in Norfolk.

#### GENUS IV.—PONTIA, *Fabricius*.

*Antennæ* with an abrupt, obconic, compressed club: *palpi* short, nearly cylindrical, three-jointed, the terminal joint slender, as long as the second, or shorter: *wings* opaque; *anterior* somewhat triangular, sometimes rounded at the tip; *posterior* rounded with a groove on the inner margin to receive the abdomen: *legs* alike in both sexes, rather slender: *claws* distinct, unidentate. Caterpillar cylindrical, downy, sometimes tuberculate. Chrysalis angulated, with an obtuse knob, or acuminate in front, supported by a transverse thread.

The species composing this genus, or at least the majority of them, are well known from frequenting our gardens in search of their mellifluous food, and their larvæ from the havoc they commit amongst the various kinds of cabbages, or brassicæ. From the simplicity of their colouring, and their common appearance, they have been unworthily neglected in this country by collectors; and in consequence we still remain unacquainted with the history and metamorphosis of some of the species, which evidently are far from uncommon. But surely the lover of nature is not to be captivated by the splendour of adventitious ornament alone: he should also delight in the contemplation of the minor beauties which she occasionally displays amongst the infinite profusion of her multifarious works.

The Pontiæ vary much, and in giving *P. Chariclea*, *Metra*, *Napææ*, and *Bryoniæ* as distinct species, I act solely from a conviction that I am not justified in uniting them with either of their congeners, though it is with diffidence, and not without repeated examination,



that I venture to propose them as novelties to British naturalists; but I trust that by so doing I shall incite some zealous entomologists to investigate this point, and endeavour to unravel the mystery which yet shrouds our views of the specific identity of these insects. So far as my feeble efforts permit me, I have attempted to elucidate this subject, although fully aware that there are many individuals who cordially despise the knowledge of species, and insist upon that of structure alone being useful, a point upon which I intend to dilate at a future period; for the present I shall content myself with remarking upon the discrepancy of form observable in this genus, by which the entomologist will see, that even in the most modern views, relative structure and habit of all the species in a genus is not invariably attended to, as upon a casual glance the most inexperienced eye would detect the dissimilarity of structure in this genus as at present constituted; for it contains not only two very dissimilar forms in the perfect state of the insect, but also in their transformations, though I have not detached them from their hitherto reputed congeners, as I do not choose to increase the number of genera already proposed: although the same principles which authorise the separation of *Gonepteryx* from *Colias*, or even of *Pieris* and *Leucophasia*, from *Pontia*, would fully justify me. Mr. Kirby, in the *Butterfly-Collector's Vade-Mecum*, observes, that *P. Cardamines* should be detached on account of its metamorphosis, and presumes that it ought to be united with *Colias*; but its organization in the perfect state will not allow of such an arrangement, as *Colias* evidently belongs to a different group of *Papilionidæ*, and the structure of the pupa of *P. Cardamines* is not materially dissimilar to that of *Leucophasia Sinapis* belonging to the present group. I shall therefore divide the genus into two sections, corresponding with the dissimilarity of form alluded to above: the first of which will embrace the true *Pontia*; and the second, those insects which, if necessary to create into a new genus, may, after Hübner, be termed *Mancipia*.

A. With the terminal joint of the palpi longer than the second: the apex of the anterior wings obtusely angled: the posterior wings not variegated beneath: the pupa strongly angulated, with a distinct short process in front, and projecting lateral appendages in front of the wing-cases. (*PONTIA*).

Sp. 1. Brassicæ. *Alis albis, anticis suprà apicè nigricantè, subtus maculis duabus nigris, posticis subtus flaviscentibus.* (Exp. alar. 2 unc. 6—9 lin.)

Pa. Brassicæ. *Linné*.—*Don*. xiii. *pl.* 446.—*Po*. Brassicæ. *Steph. Catal.*

Both sexes of this destructively common insect have the upper surface of all the wings white, with the tip of the anterior wings above black, the patch on its inner edge being indented, the points of the indentations following the direction of the nervures, and the extreme tip being slightly irrorated with white, with the cilia waved with black and yellowish: the female has also two roundish transverse spots on the disc, and an elongate triangular one on the thinner margin of the wing: the costa and base of the anterior wings are irrorated with dusky, and sometimes tinged with yellowish: and the posterior wings have a black costal spot: beneath, the under surface of the anterior wings in both sexes is similar; the tips being yellowish, the base slightly irrorated with dusky, and two transverse spots adorning the disc: the posterior wings are pale yellowish, with a very obsolete costal spot, and are rather thickly sprinkled with dusky, especially in the female: the body and antennæ are black above, and white beneath, the latter have an interrupted brown line from the base to the capitulum, which gives them the appearance of being annulated, the capitulum itself is yellowish at the tip.

Var.  $\beta$ . Male with a black spot on the disc of the anterior wings.

Var.  $\gamma$ . Female with the upper surface of the posterior wings yellowish.

The caterpillar is greenish with three yellow longitudinal lines, one placed on the back, the others on the sides; between these are several tubercular black spots, each bearing a pale hair: the tail is black: the chrysalis is greenish, spotted with black, with three yellow stripes.

This species makes its appearance about the middle of May, or earlier if the weather be favourable, and towards the end of the month it lays its eggs, which are obtuse and elevated vertically, in clusters on the under side of cabbage leaves. The caterpillars are hatched in a few days, and continue to feed together till the end of June; they then prepare to undergo their change, and search for a convenient place to attach themselves: when they have made choice of a situation they fasten their tail by a web, and carry a strong thread of silk round their body near the head, and after hanging a few hours, the chrysalis becomes perfectly formed; in about sixteen days the butterfly is produced;—but in the year 1818, when the various species of *Pontia* abounded so greatly near the metropolis as to attract the notice of the public journalists, I had a brood of this species, which was scarcely seven complete days in the pupa state:—the thermometer during the period varying from 70° to 80°. The caterpillars from this brood become full fed by the middle of September, and change to the pupa, in which state they continue throughout the winter, and put on their final change in the following spring about May.



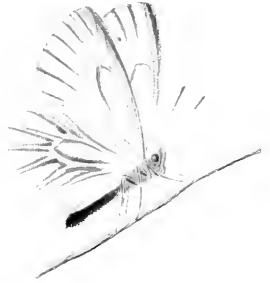
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Sp. 2. Chariclea. PLATE III.\* F. 1. ♂,—F. 2. ♀.—*Alis albis, anticis suprâ cinerascete nebulis nigris ciliisque flavo-albulis, subtus maculis duabus nigris, posticis subtus lutescentibus, nigro valdè irroratis.* (Exp. alar. 2. unc. 3—6 lin.)

Po. Chariclea. *Steph. Catal.*

This insect, which has hitherto either been confounded with the preceding, or unnoticed by entomologists, is considerably smaller than it: both sexes have the upper surface of all the wings white, with the tip of the anterior wings above ash-coloured, without any internal indentations, in the female deeply clouded within with black, and margined without in both sexes by immaculate yellowish-white cilia: the female, as in Po. Brassicæ, has also two round transverse deep black spots and a clavate one on the thinner edge of the wings; the costa in the male is dusky, or ash-coloured, and in the female yellowish: the posterior wings in both sexes have a small black costal spot—a character common to all the true indigenous Pontiæ: beneath, each sex has the tips of the anterior wings clear yellow, and two transverse black spots; and the posterior wings deep yellow, very thickly powdered throughout with minute dusky or black spots: the body is blackish above, with flavescent down, and white beneath; the antennæ resemble those of P. Brassicæ.

† Var. β. With the apical spot of the anterior wings unclouded, very pale, cinereous, and the female with two transverse and an obsolete clavate black spot above. In the collection of Mr. Haworth; who has distinguished it by the trivial name of præcox, from the early period of its appearance in the winged state.

The chief points of discrimination between this species and the preceding insect consist in its inferior size, the dissimilar colour of the apical spot on the anterior wings above, and the integrity of its inner edge, the pale cilia with which it is fringed, and the deeper colour, and more thickly irrorated under surface of the posterior wings: which characters, taken collectively, appear fully sufficient to warrant its separation as a species, exclusively of its period of flight. Now, if it be a vernal brood of Po. Brassicæ alone, by what process do the colour and the shape of the markings become changed? and whence its inferior size? The first question has been answered, at least so far as regards the colour, upon the supposition that the solar rays are not sufficiently powerful at the period when the insect is produced, to produce the intense hue so conspicuous in the supposed æstival brood, or Po. Brassicæ; but as this last species also occurs early in the month of May, that solution is not satisfactory, and I am of opinion that Po. Chariclea appears also a second time towards the end of June; at all events, that part of the question relative to the variation in the form of the markings remains unsolved, and upon a further investigation the stability of the other solution becomes questionable, as the under surface of the inferior wings are more deeply irrorated with black, and their ground colour is more intense than in Po. Brassicæ. With respect to the other question—the inferiority of size—that has been answered upon the presumption that the animal diminishes in bulk from the increased period that

it is supposed to continue in the pupa; that is, from September to April: whereas the æstival brood remains in that state a few days only.

Before I conclude this discussion, let me ask how we are to reconcile the anomalous alternating increase and diminution of size, if, as is alleged, this species and *Po. Brassicæ* are simply the vernal and æstival broods of the same insect? We know of no corresponding fact in any other department of zoology, unless *Po. Rapæ* and *Metra* (which are to each other, apparently, what the two species under investigation are) offer an example\*, but these insects I presume are distinct, upon similar grounds to those which appear to separate the insects that have promoted these observations; and which, I trust, will stimulate some persevering entomologist to investigate the subject thoroughly; as it becomes a question of importance to ascertain whether *P. Chariclea* be really a distinct species, as it involves the curious physiological considerations above noticed, which every unprejudiced person must acknowledge are well worthy of attention, however he may inveigh against the nicety which appears requisite to attend to in the discrimination of species; though in this instance *locality* can have nothing to do with the point at issue, as the two species are found in the same fields at Hertford.

My attention was first called to an investigation of the *Pontia*, from observing many years since the specimens above alluded to in Mr. Haworth's collection, who hinted his suspicions that they might eventually prove distinct from *Brassicæ*. I now possess several specimens of var.  $\alpha$ , all of which were taken by myself very early in April at Hertford: Mr. Haworth's specimens were taken in Derbyshire by the Rev. W. T. Bree, at the same period of the year. I have recently noticed var.  $\alpha$  ♂ of this species in other collections, but confounded with *Po. Brassicæ*.

Sp. 3. *Rapæ*. *Alis albis vel flavescens-albidis, anticis supra apice fuscescente, basi paululum nigricante, subtus maculis duabus aut una nigris, posticis subtus late flavescentibus basi nigro irroratis.*  
—(Exp. alar. 1 unc. 7 lin.—2 unc. 6 lin.)

*Pa. Rapæ*. *Linné*.—*Levin. pl.* 26.—*Po. Rapæ*. *Steph. Catal.*

Very similar at the first glance to the preceding species, but usually much smaller, and of a slightly dissimilar form and colour: the apex of the anterior wings bears only a very slight fuscous, dusky or black subtriangular, irregularly defined spot, which does not extend along the hinder margin of the wing: the male has also a conspicuous black spot, and the female two round, and an obsolete elongate-triangular dusky spot, on the upper surface of the

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\* *Geometra illunaria* and *jularia* may probably be instanced, but they unfortunately afford another proof of our ignorance; and, unlike the *Pontia*, the specimens which continue the longest in the pupa state exceed the others in size; the latter insect, which is the least, if the produce of the first, undergoing all its changes in about three months.

superior wings; and both sexes have two black spots beneath them. The under surface of the posterior wings is of a brighter yellow than in *Po. Brassicæ*, with a deep orange streak on the costa, and it is usually much less speckled with minute black dots, the marginal cells being nearly immaculate: the cilia are white, slightly sprinkled with dusky at the tip of the anterior wings: the body and antennæ are coloured as in *Po. Chariclea*.

Var.  $\beta$ . Smaller: male with the apex of the anterior wings, and two spots on their upper surface black; female without the elongate-triangular spot on the thinner edge of the same wings.

Var.  $\gamma$ . Male with a very obsolete spot on the anterior wings: female with two obsolete spots above: both sexes with the second spot beneath nearly obliterated.

Var.  $\delta$ . Male with the apex of the anterior wings scarcely clouded, the disc immaculate; one spot only on the under surface.

Var.  $\epsilon$ . Male with a deep dusky triangular spot on the apex of the anterior wings, extending considerably along the hinder margin, and a cordated black one on the disc: two black spots beneath.

Exclusively of the above, there are several intermediate varieties in size, colour, and in the size and form of the spots. The female is usually yellowish-white in all the varieties, some of which approach to *Pa. Nelo* of Borkhausen.

The caterpillar is green, with a paler line on the back, and a whitish line, often punctured with yellow on each side: the chrysalis is greenish, spotted with black.

Like *Po. Brassicæ* this species abounds throughout the southern parts of the country, but its larvæ feed solitarily upon various kinds of brassica and reseda, upon which the parent insect deposits her eggs singly, and not in clusters, in the same manner as *Po. Brassicæ*: the first brood appears at the end of April; the second about the beginning of July.

Sp. 4. *Metra*. *Alis albis basi nigris, anticis supra apice subnubuloso, subtus maculis duabus, aut unâ, obsoletis nigris, vel immaculatis, posticis subtus flavescens nigris irroratis.* (Exp. alar. 1 unc. 8—11 lin.)

*Pap. alba, minor, immaculata. Pctiver, pl. 1. f. 13, 14.—Pontia Metra. Steph. Catal.*

Very closely allied to var.  $\delta$  of the last described species, but apparently distinct, for similar reasons with those stated in the observations appended to *Po. Chariclea*: the anterior wings above are very acute at the apex, they are white in both sexes, with the base black and the tip slightly clouded with dusky: the male has a single obsolete dusky spot, and the female two—the one at the anal angle being geminated; this sex has also the basal half of the wing much clouded with dusky: the posterior wings in both sexes are white, with the base black, and a dusky costal spot. Beneath, the sexes are similar; the

anterior wings are white, with the tip yellow, the base and two obsolete spots dusky: the posterior wings are bright yellow, with a pale orange streak on the costa, strongly irrorated throughout with dusky, the anterior half of the discoidal cell being least speckled. The antennæ, legs, and body resemble those of *Po. Rapæ*: the cilia are entirely clear white.

Var. *β*. Male with the wings above cream colour, the base of all deep black; the discoidal spot on the anterior, and the costal spot of the posterior nearly obsolete: beneath, the anterior wings have but a single obsolete discoidal spot, and the posterior have the hinder half of the discoidal cell so thickly irrorated with dusky as to appear streaked.

Var. *γ*. Male with all the wings above immaculate white, with the base black, and the apex of the anterior very obscurely clouded: beneath similar to var. *β*.

I am unacquainted with the larva of this species; but the chrysalis does not materially differ from that of *Po. Rapæ*. The insect occurs early in April, and a second time towards the end of June. I obtained specimens of the first brood at Hertford; and of the second I captured some this season, at Ripley, at the latter period.

Sp. 5. *Napi. Alis supra albis, subtus venis dilatatis fusco-virescentibus, anticis apice, posticis paginâ omni, flavescens.*—(Exp. alar. 1 unc. 4 lin.—2 unc.)

Pa. *Napi. Linné.—Don. viii. pl. 280. f. 1.—Po. Napi. Steph. Catal.*

Wings above white, with the tip of the anterior dusky: the male with a black spot between the middle and hinder margin of the anterior wings, the under surface of these wings has the nervures dusky, with the tips pale yellow, and two dusky spots towards the hinder margin: the posterior wings beneath are pale sulphur yellow, with the nervures much dilated and dusky-greenish; the nervure on the costal edge of the discoidal cell with a clear yellow dash. The female has the anterior wings more rounded than the male, with two large black spots placed transversely, and an obscure claviform dash towards the thinner edge: both sexes have a black costal spot on the posterior wings above: the body black, with its under part white: the antennæ white, annulated with black.

Var. *β*. With the base of all the wings in both sexes deep black.

Var. *γ*. Male with the anterior wings immaculate above, with one indistinct spot beneath: the base of all the wings above clear black.

Var. *δ*. Both sexes with the nervures of the posterior wings dilated at the base beneath.

Var. *ε*. Female with the wings yellowish above.

Var. *ζ*. Dilated nervures of the posterior wings beneath dusky in both sexes.

The caterpillar is green-brown, clearer on the sides, with the stigmata yellowish; it is covered with white tubercles, with black tips, bearing very delicate hairs; it feeds on the *Brassica Napus* (or *Navew*) and similar plants, like its con-



genera. The chrysalis is greenish-yellow, spotted on the head and back; with the anterior edge of the wing-cases strongly spined.

This pretty insect is not uncommon in all parts in the vicinity of the metropolis; but it affects woods and meadows in preference to gardens. Very great dissimilarity prevails amongst the varieties described above, which renders it difficult to place some of them to their proper locations; in fact, amongst them are several which closely approximate to *Po. Napææ* and *Sabellieæ*; but the wings are of dissimilar form.

Sp. 6. *Napææ*. *Alis lacteis, superioribus suprâ puncto apicque nigro-maculatis, inferioribus pallidis, vcnis tribus primoribus dilatato-virescentibus*.—(Exp. alar. 1 unc. 10 lin.—2 unc. 2 lin.)

Pa. *Napææ*. *Esper*.—*Po. Napææ*. *Steph. Catal.*

Like its congeners this species varies considerably: the male has the upper surface of the wings milk-white, with the tip, a spot, and two or three triangular dashes on the hinder margin of the anterior black: beneath, the latter have slightly dilated greenish nervures, with two cinereous spots placed transversely, and a yellowish tip: the posterior wings are pale yellowish, with a deeper costal streak: the basal nervures above dilated and greenish. The female has the tip of the anterior wings, and three spots, one of which is subtriangular, and placed on the thinner edge of the wings, black or dusky, and the posterior wings are clearer yellow. The nervures on the under surface of the posterior wings are more or less dilated in different specimens. Var.  $\beta$ . Female without the transverse cinereous spots beneath.

The larva and pupa are unknown to me; the perfect insect occurs in the metropolitan district, and probably in other parts of the country. I think, with Godart, that it may only be a very large variety of *Po. Napi*, but as it appears to have characters sufficient to constitute a distinct species, the determination of this point must be left for a future investigation.

Sp. 7. *Sabellieæ*. PLATE III. \* f. 3, ♂.—f. 4, ♀.—*Alis suprâ albidis basi nigricante, utrinquè fuscescente-vcnosis; subtus anticis apic, posticis paginâ omni flavescens*. (Exp. alar. 1 unc. 7—10 lin.)

Pa. *Sabellieæ*. *Petiver, pl. 1. f. 17, 18, ♂.—f. 15, 16, ♀.—Po. Sabellieæ. Steph. Catal.*

Allied to *Po. Napi*, but dissimilar in form, the wings being shorter and more rounded; the anterior being nearly of the form of those of *Po. Cardamines*,—it has the upper surface of all the wings of a yellowish-white, with broad dusky irrorated nervures; broadest towards the hinder margin: the male has the base of the anterior wings and a single irregular spot in the fourth marginal cell dusky, and the female the base and tips of the same wings, a spot in the fourth and sixth marginal cells, and the inner edge of the wings of the same

colour: both sexes have a similarly coloured spot on the upper margin of the posterior wings above. Beneath, all the wings are adorned with very broad dusky nervures, resembling those in var.  $\zeta$  of *Po. Napi*, but varying in different specimens; and the dilated nervure on the upper edge of the discoidal cell is destitute of the insulated yellow spot, which every specimen of *Po. Napi* that has passed under my examination possesses.

I have long had two specimens of this insect—which agree with the figures cited above, and with the *Bryoniæ* of Wallner; but *Petiver's* name having the priority, I have adopted it—the locality of which I unfortunately forget; but on the 4th of June last (1827) I had the good fortune to capture a third specimen in Highgate wood, agreeing precisely in its upper surface and in form—which is of far greater importance—with the specimen from which figure 2 was drawn, but differing a trifle by having the nervures beneath less dilated towards the tips of the wings. I have since taken other specimens at Ripley, and Mr. Haworth has recently captured it in Battersea Fields. There are also specimens in the British Museum.

B. With the terminal joint of the palpi shorter than the second: the anterior wings distinctly rounded at the tip; the posterior variegated beneath: the pupa angulated, with an elongated acute process, or beak, in front: lateral appendages wanting. (MANCIPIUM.)

Sp. 8. *Daplidice. Alis albis, anticis maculâ mediâ apicque nigris, posticis subtus lutescente-viridibus, maculis strigâque angulatâ albis.* (Exp. alar. 1 unc. 10 lin.)

Pa. *Daplidice. Linné.*—*Po. Daplidice. Curtis. i. pl. 48.*—*Steph. Cat.*

This rare British insect is white above: the female has the anterior wings black at the tip, with four white spots; towards the middle a large quadrangular black patch, divided in the centre with a white line, and on the thinner margin towards the tip is a round black spot: the posterior wings are edged with black, the border being internally waved with white spots: beneath, the anterior wings are nearly similar to the upper surface, but the apical and central spots are greenish: the posterior wings are white, varied with yellowish green; the latter coloured part being finely irrorated with black. The male (of which I have not seen an indigenous specimen) has not the black spot on the thinner edge of the anterior wings above, and the posterior wings are immaculate: beneath both sexes resemble each other: the body is whitish, with the back black: the antennæ are whitish, annulated with black.

The caterpillar, according to the description of the continental entomologists, is dull blue, edged with yellow and spotted with black: the head is clear green, spotted with yellow and black. The chrysalis is greenish, or ash-coloured, according to its age. The larva feeds upon various kinds of cabbages, on the *Reseda lutea*, and, from Hübner's account, on the *Thlaspi*, of which it eats the seeds.

On the continent this insect is double-brooded, its first appearance being about the end of April or the beginning of May, and the second about the middle of August; but the rarity of this species in Britain has hitherto prevented entomologists from correctly ascertaining whether such be the case in this country, though it must be presumed that is the fact, as the only recently recorded examples were captured in May and August, the first by Dr. Abbott—as stated in *Lepidoptera Britannica*—and the last by myself, on the 14th of August, 1818, in the meadow behind Dover Castle; and, unless greatly deceived, other specimens were at that time previously observed by me, but mistaken for dark females of *Po. Napi*. At the period last-mentioned, Mr. Dale informs me that a specimen was taken near Bristol. It was taken, according to Ray, by Petiver, at Hampstead, and by Vernon at Gamlingay, in Cambridgeshire, and it has also occurred near Bath.

Sp. 9. *Cardamines*. *Alis albis, anticis utrinquè lunulâ mediâ nigrâ, maris ad apicem fulvis, posticis subtus luteo-viridi nebulosis.* (Exp. alar. 1 unc. 4 lin.—2 unc. 1 lin.)

Pa. *Cardamines*. *Linné.*—*Lewin, pl. 30.*—*Po. Cardamines.*—*Steph. Catal.*

The upper surface of all the wings in both sexes is white, with the base dusky; the anterior with a black lunule, which is usually very small in the male, in which sex they are adorned with a deep fulvous spot, extending from the lunule to the tip; the tip itself is dusky, or black, its posterior edge interrupted with black and yellowish: the posterior wings have a few dusky spots on the edge: beneath, both sexes have the anterior wings white, with a white lunule in the centre, a few black dots on the costa, and the tip varied with greenish yellow: the male has the base slightly tinged with sulphur, and a deep fulvous spot towards the tip, corresponding with that on the upper surface: the posterior wings in both sexes are alike beneath; they are white, prettily marbled with green and yellowish, the latter colour predominating on the nervures: the body is black above and white beneath: the antennæ are white, annulated with brownish.

Var.  $\beta$ . Both sexes with a black spot on the upper surface of the posterior wings.

Var.  $\gamma$ . Both sexes with the black lunule on the upper surface of the anterior wings nearly obliterated.

Var.  $\delta$ . Female with a V-shaped greenish-yellow spot on the under surface of the anterior wings, placed between the lunule and the thinner margin.

† Var.  $\epsilon$ . Male? with the fulvous spot nearly obliterated. This variety, which is in Mr. Haworth's collection, is probably an hermaphrodite.

The caterpillar is green, with a white longitudinal stripe placed above the legs;

it feeds solitarily on the Cardamine *impatiens*, *Turritis glabra*, *Brassica campestris*, &c. preferring the seeds. The chrysalis is either green or brown, with a fulvous spot on the wing-cases in the male; the middle is swollen and conical, with the extremities much produced and fusiform.

A common and highly beautiful species, occurring at the end of May in lanes, meadows, and gardens.

(From the trifling attention which has hitherto been bestowed upon the *Pontia*, I fear my readers will hastily exclaim that I have been too diffuse in my descriptions, and that "all the species are merely varieties;" but I trust that such persons will cautiously investigate the subject—which I freely confess requires elucidation—before they prejudge the question. It may, however, be remarked, that the above observations originated solely from an examination of recent specimens, without my being aware that they corresponded with those of *Petiver*, whose work on the British *Papiliones*—in which the *Pontia* are subdivided as above, with the exception of *P. Chariclea* and *Napææ*—was published upwards of a century ago, though totally disregarded by subsequent writers!

#### GENUS V.—LEUCOPHASIA \* *mili*.

*Antennæ* with an abrupt, obconic, compressed club: *palpi* very short, depressed, three-jointed, the basal joint large, conic, the second small, quadrate, the terminal one minute, globose: *wings* opaque, suborbicular, the discoidal cell small, basal; posterior wings slightly grooved: *legs* alike in both sexes, moderate: *claws* distinct, bifid. Caterpillar cylindrical, downy. Chrysalis angulated, fusiform, supported by a transverse thread.

The same principles which justify the separation of many of the well-established and incontroverted genera among the Coleoptera, authorize the disengagement of the present genus from *Pontia*; but although a strenuous advocate for the establishment of genera upon important variations of structure, it is not without reluctance that I add another generic name to the almost infinite number with which the pages of entomological works are necessarily filled, from the vast extent of the science; however, in this instance I feel less regret than I should otherwise have done, from my path having been traced out by Mr. Curtis, whose published characters are incorporated above, in his remarks upon the genus *Pontia*, although I had previously divided *Leucophasia* from that genus in my MS, but without a name.

Sp. 1. *Sinapis*. *Alis albis, immaculatis, anticis supra apice fuscis, posticis subtus cinerascente-nebulosis.* (Exp. alar. 1 unc. 4—10 lin.)  
Pa. *Sinapis*. *Linné*.—*Levin*, pl. 29. f. 4. 5.—*LeSinapis*. *Steph. Cat.*

\* *Λευκος*, *albus*—*ἴσσις*, *apparitio*.

Wings above milk-white, with a dusky, rounded, spot at the tip of the anterior, and the base of all a little irrorated with dusky: beneath the same, with the tip and base yellowish tinged with green, and thickly irrorated with cinereous, as the costa is also: the posterior wings are slightly tinged with yellowish, and thickly sprinkled with dusky irrorations disposed in clouds, having the appearance of transverse fasciæ, and leaving some patches of the ground colour quite clear: body cinereous above, white beneath: antennæ white, with black rings: the female differs in having the wings more rounded.

Var. *β*. With the spot at the apex of the anterior wings above deep black.

Var. *γ*. With the wings above immaculate white, or cream-colour.

Caterpillar green, with a deep yellow lateral line: it feeds on the Lotus corniculatus and Lathyrus pratensis, but not upon the cabbage, as stated in the Butterfly Collector's Vade-Mecum. The chrysalis is fusiform, resembling that of *Po. Cardamines* and *Daphidice*; it is greenish with a yellow streak on the sides, and white spots on the stigmata.

Not uncommon at the end of May and beginning of August at Coombe and Darent Wood: it also occurs in other places.

#### GENUS VI.—PIERIS.

*Antennæ* with an abrupt, obconic, slightly compressed club: *palpi* short, three-jointed, the basal joint long, recurved, cylindric; second about half the length of the first, the terminal one slender, about the length of the second, linear: *wings* sparingly covered with scales, subdiaphanous; the anterior subtriangular, the posterior suboval, with a groove to receive the abdomen: *legs* alike in both sexes: *claws* distinct, bifid. Caterpillars subfusiform, hairy, slightly tuberculated. Chrysalis angulated, head-case very obtuse, fastened transversely by a thread.

Latreille having adopted the term *Pieris* to designate the European *Pontia* and the genera which have recently been detached therefrom, and his *Pi. Cratægi* being placed as the type, I have here employed it in preference to coining a new name, being uncertain of

#### GENUS VII.—DORITIS, *Fabricius*.

*Antennæ* rather short, with an abrupt, nearly oval, straight club: *palpi* a little elevated above the head, distinctly three-jointed, cylindric-conic: *wings* suboval, sparingly covered with scales: the posterior excised: *legs* similar in both sexes: *claws* simple; females with a strong carinated concave membrane on the posterior segment of the abdomen. Caterpillar with tentacula. Chrysalis oval, folliculated.

‡ Sp. 1. Apollo. *Alis albis; posticis ocellis supra quatuor, subtilis sex, basique rubris.* Linné. (Exp. alar. 3 unc.)

Pa. Apollo. Linné.—Don. xiii. pl. 433.—Do. Apollo. Steph. Catal.

Wings white: the anterior wings with five black spots: the base and costa

the species which originally formed the type of the genus *Pieris* of Schrank,—which name I am, however, aware has been used by Mr. Swainson, in his *Zoological Illustrations*, for a group of South American white butterflies, but, in my opinion, improperly.

sprinkled with black dots, and the hinder margin nearly transparent and fuscous, a little irrorated with dusky, with an irregular waved dusky band parallel with the hinder margin, and sprinkled with white: the under surface is nearly similar, but the two black spots towards the tip are nearly evanescent, and are red in the centre: the posterior wings above have the base and inner edge dusky: an ocellus with a white pupil, surrounded by a red and black iris on the costa, and another similar one on the disc: these ocelli appear on the under surface, which is also adorned at the base with an interrupted red band externally bounded by black, and on the inner edge is an irregular dash of red, edged with black, tending towards the discal ocellus: the base of the wing is dusky, and there is a faint trace of a fascia of spots parallel with the hinder margin: the body is dusky, clothed with cinereous hairs: the antennæ white, with a black club.

Caterpillar velvety-black, clothed with short stiff black hairs; and adorned with two rows of deep orange spots, one dorsal, the other ventral; the margins of the segments are black, edged with blue: the head is small in proportion to the body, and the neck is furnished with a yellow, furcate, retractile, tentacule: it feeds on the saxifragæ. The chrysalis is black, powdered with blue; it is thick, short, oval, spotted with red on each side anteriorly: is usually accompanied by the exuvie of the larva, and subfoliculated.

This elegant insect, which is a native of the Alps and the high mountains of Europe, is said by Donovan, from the vague notice given in the preface to *Lepidoptera Britannica*, p. 29, to be a native of the isle of Lewes, one of the Hebrides; but from information subsequently obtained from Professor Hooker, it appears that the specimen supposed to have been captured there, was in a box of insects belonging to Lord Scaforth, which had been sent from Norway, where *Do. Apollo* abounds.

‡ Sp. 2. *Mnemosyne*. *Alis albis, nigro nervosis; primoribus maculis duabus nigris marginalibus*. Linné. (Exp. alar. 2 unc. 4—6 lin.)

Pa. *Mnemosyne*. Linné.—Turton.—Do. *Mnemosyne*. *Steph. Catal.*

Similar to the foregoing, but less, and without the ocelli: wings white, with black nervures: the anterior on both surfaces, with the base, dusky; two black spots in the middle towards the costa; the hinder margin membranaceous, transparent, fuscous, with an obsolete white band composed of spots parallel with the margin: there is also a triangular fuscous spot between the marginal band and the posterior edge of the basal areolet\*: the posterior wings

\* The term areolet was used by Mr. Kirby prior to the generally adopted one of cell, or cellule, of Jurine and subsequent writers.—Vide *Kirby and Spence*, *Int. v. iii. p. 625*.

Sp. 1. Cratægi. *Alis ferè concoloribus albis, venis nigris.* (Exp. alar. 2 unc. 4—10 lin.)

Pa. Cratægi. *Linneé.—Lewin. pl. 24. f. 1—4.—Pi. Cratægi. Steph. Catal.*

An elegant insect: both surfaces of the wings are white, with black nervures, and nearly correspond; above, the anterior wings are margined on their outer edge with irregular triangular transparent dusky spots, the nervures being black, with the transverse one at the tip of the basal arcolet very broad: the posterior wings are similarly bordered on their outer edges, but the nervures are less expanded on the disc: beneath, the anterior wings resemble the upper surfaces, but the nervures are more dilated; the posterior wings, on the contrary, have the nervures much stronger than on the upper surface, and are very thickly irrorated with dusky: both sexes have the wings very transparent, the female especially; and this sex has the nervures generally brownish.

Var. *β.* Without the black spots on the hinder margin of the anterior wings.

The caterpillar lives in society, beneath a silken web, during the earlier periods of its existence: it is at first black; it afterwards becomes furnished with very short yellow and white hairs, and three black, longitudinal lines, one dorsal, the other lateral: it feeds on the whitethorn. The chrysalis is yellow or white, with small stripes and spots of black: the perfect insect appears in about three weeks.

This elegant insect is somewhat periodical in its appearance, at least near London. In June, 1810, I saw it in plenty at Coombe-wood, and in the following year I captured several at Muswell-hill, since which time I have not seen any at large. Mr. Haworth informs me that it used to occur constantly at Chelsea, but he has not seen any of late. In the New Forest, near Brockenhurst, and near Herne-bay, in Kent, it abounds, and I believe regularly: it is also found near Euborne, Berks, and Glanville's-Wootton, Dorset, as I am informed by Mr. Dale.

#### FAMILY II.—NYMPHALIDÆ, *Swainson.*

*Antennæ* with a distinct club, sometimes much compressed and abruptly produced, or formed gradually and scarcely compressed; not hooked at the tip: *anterior legs* in both sexes more or less imperfect, intermediate and posterior perfect, furnished with moderate bifid claws, or simple with an unguiform appendage: *hinder tibiæ* with one pair of spurs only, or simple: *posterior wings* with a groove to receive the abdomen. *Larva* cylindric, spinose, or

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are also similar on both surfaces: their inner edge is dusky, and there is an indistinct small dusky spot on the costa, and a black one towards the centre of the disc: the body is black, covered with cinereous down, and the antennæ are totally black.

Caterpillar and chrysalis unknown: the perfect insect is a native of the alpine countries of Europe, and has been incorrectly marked as an indigenous species by Dr. Turton.

tuberculated, sometimes downy and bimucronate behind: *pupa* angulated, not fastened transversely.

It has been justly observed by Mr. Swainson, that the insects of this family are conspicuous for their strength of body, rapidity of flight, superiority of size, and brilliancy of colouring; but these perfections are counterbalanced by the imbecility of their anterior legs, which are generally destitute of claws, and frequently so short as to be perfectly useless. In proof of these observations it will be sufficient to notice the powerful and daring evolutions of the beautiful *Vanessæ* and *Argynni*, the graceful flight of the *Limenites*, or the splendid iridescence of the “imperial purple plumes” of the *Apaturæ*, among the indigenous species.

The genera may be known by the following concise definitions:

<i>Antennæ</i> abruptè clavatæ: <i>Oculi</i>	}	nudi: <i>Palpi</i>	{	brevissimi: . . . 8. NEMEOBIUS.
				pilosissimi: 9. MELITÆA.
			capite longiùs, inferiores	{
		pubescentes:		vix hirsuti: 10. ARGYNNIS.
		<i>Ala antica</i>	{	angulatæ: . . . 11. VANESSA.
				haud angulatæ: . . . 12. CYNTHIA.
<i>Antennæ</i> extrorsùm gradatim: crassiores, <i>clavâ</i>	}	rectâ: <i>Oculi</i>	{	nudi: . . . 13. APATURA.
				pubescentes: . . . 14. LIMENITIS.
		plus minùsve arcuatâ:		. . . 15. HIPPARCHIA.

#### GENUS VIII.—NEMEOBIUS\*.

*Palpi* horizontal, very short, hairy, three-jointed, basal joint minute, short, stouter than the following, which is elongate, nearly cylindric, a little curved at the base, terminal joint truncate-conic, nearly half as long as the second: *antennæ* terminated by a short compressed club: *anterior wings* short, triangular; posterior suborbicular, denticulated: *anterior legs* imperfect, very hairy, in the male short, resembling the others in the female: *tarsi* with minute, simple claws: *posterior tibiæ* without spurs *Larva* and *chrysalis* unknown.

It is surprising that the advocates for closely subdividing insects into genera agreeably to their structure, should have permitted the present anomalous genus to remain associated with *Melitæa*, Fabr. its *prima facie* appearance being so totally unlike the individuals of that genus, and its structure not only remarkably different from that of the other *Fritillaries*, as they are termed, but in many respects at variance with the characters of the family, as instanced in the simplicity of the claws and posterior *tibiæ*. Its extremely short palpi, and the different neuration and brevity of the wings, sufficiently point out the present genus from the two following.

\* *Nemus*, *nemus*; *biow*, *vive*.



Sp. 1. *Lucina*. *Alis denticulatis, suprâ fuscis, maculis fulvis, posticis subtus fasciis duabus macularibus ulbidis.* (Exp. alar. 1 unc.—1 unc. 4 lin.)

Pa. *Lucina*. *Linn.—Don. vii. pl. 242. f. 2.—Me. Lucina. Steph. Catal.*

The smallest indigenous species of this family: the upper surface of all the wings is obscure brown, with irregular spots of fulvous, disposed transversely, the base of the wings being immaculate, and the outer row of spots being adorned in the centre with a black dot: the anterior wings beneath are somewhat similar to the upper surface, but paler, with two ranges of fuscous spots towards the tip, which is also spotted with whitish; the posterior wings beneath are deep fulvous, with two rows of subquadrate white spots, and a marginal striga of black dots: the cilia on both surfaces are white, interrupted by fuscous: the upper part of the body and the antennæ are dusky.

Var. *β*. Both sexes with the upper surfaces of all the wings pale fulvescent, with paler spots.

The male has frequently the upper surface of the posterior wings nearly all fuscous, with a single marginal row of lunulated fulvous spots; and the female has often a whitish transverse band of spots on the centre of the upper surface of the same wings.

The caterpillar and chrysalis are unknown; the former is said by Stewart to feed on grasses.

Far from a rare species, though not very frequently met with, being local. I have taken it abundantly at Coombe-wood, and occasionally at Darenth, at the end of May. In Ray's time it was found at Boxhill and near Dulwich. Mr. Dale has taken it in the New Forest, and in Dorsetshire and Berkshire.

#### GENUS IX.—MELITEA, *Fabricius*.

*Palpi* ascending, long, divaricating, very hairy, three-jointed; basal joint moderate, a little bent, second elongate, cylindric, or subfusiform; terminal joint acicular, half the length of the preceding, or short and minute, sometimes ovate: *antennæ* with a short abrupt compressed club: *anterior wings* elongate triangular, *posterior* orbicular: *anterior legs* imperfect in the male, short in the female: *tarsi* with double nails, or with simple claws, furnished with an unguiform appendage. *Larva* pubescent, with fleshy tubercles, or spines. *Chrysalis* slightly angulated, head-case obtuse.

I may here reiterate the observations in page 15 concerning the dissimilarity of structure apparent in the contents of modern genera; but for similar reasons to those there stated, I shall retain the genus *Melitea* without further change than the removal of *Nemeobius* therefrom: I shall therefore merely point out the sectional characters, previously remarking, that the species may be distinguished from the *Argynni* by their elongated anterior wings, and that the structure of the palpi and silvery patches on the inferior surface of

their posterior wings in the last section, beautifully exhibit the gradual manner in which nature leaves one conterminous group for another.

A. Palpi very slender, the second joint a little bent at the base, nearly cylindrical, the terminal acute, half as long as the preceding: wings fasciated with yellow, or ochraceous beneath.

Sp. 1. *Athalia*. *Alis suprâ nigris fulvo tessellatis, posticis subtùs flavidis fuscis duabus fulvis posteriore lunulis nigris insignatâ.* (Exp. alar. 1 unc. 7—9. lin.)

Pa *Athalia*. *Esper.*—Pa. *Dictynna*. *Lewin. pl. 14, f. 5, 6.*—Me. *Athalia*. *Steph. Catal.*

Above black, tessellated transversely with fulvous: anterior wings beneath fulvous, with a few black dashes towards the costa, and some yellow spots at the tip: posterior wings with a fascia at the base composed of four nearly square yellowish spots, each edged with black: a brown band, in which is an oblong yellow spot also edged with black; succeeded by another band, of a yellow or ochraceous colour, formed of numerous united spots, each edged with black: then a band of brown lunules edged with black; and finally a third yellowish marginal band of six lunules, also edged with black: cilia yellowish, spotted with black.

Var.  $\beta$ . Wings black above, with alternate transverse rows of whitish and pubescent tessellations: the central band on the posterior wings beneath composed of one row of yellowish elongate spots.

Var.  $\gamma$ . Wings black above, with the two rows of fulvous tessellations towards the hinder margin of the anterior wings united.

Var.  $\delta$ . Wings black above with very small fulvous spots, those on the outer margin wedge-shaped, and the bases of all the wings above nearly immaculate. Caterpillar black, shining, with two white dotted lines on each segment, and white tubercles on the side: it feeds on plantain. Chrysalis gray-brown, spotted with black on the wing cases, and with a series of black and reddish spots on the hinder part of the body.

A very variable species, and rather uncommon in the neighbourhood of London: it is, however, abundant in some parts of Devonshire, towards the end of May. According to Petiver, it was frequent in Cain-wood in his time.

This species is usually known by the name *M. Dictynna*, but the insect which accords with the Fabrician description has not been observed in Britain. I have therefore reverted to the original name proposed by Esper. I may here remark, that owing to the insufficiency of the original characters, much confusion has arisen in the nomenclature of the *Melitææ*, as many of the recently discovered species differ so slightly, that the same general description will apply to several.





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‡ Sp. 2. *Pyronia*. PLATE IV. f. 1, 2.—*Alis fulvis lituris nigris, posticis nigris strigâ fulvâ, subtus fasciâ nigrâ venis fulvis, posticis fasciâ albida venis maculisque atris*.—Haw. (Exp. alar. 1 unc. 7 lin.)

Pa. *Pyronia*. *Hübner*.—Me. *Pyronia*. *Steph. Catal.*

Rather less than Me. *Athalia*: anterior wings above deep fulvous, with the base, the nervures, blotches in the middle, a waved streak and marginal band black: posterior black above, with a waved streak towards the middle, composed of six subquadrate fulvous spots: beneath, the anterior wings are fulvous, with two quadrate black spots at the base, a broad black band intersected by fulvous veins, a streak near the hinder margin composed of black confluent lunules, and a very narrow black marginal streak: posterior wings fulvous at the base, with about eight angulated contiguous black spots: in the middle a broad waved whitish band intersected by black veins, behind the band a streak of fulvous lunules, edged with black, then an undulated streak towards the hinder margin of black lunules, with ochraceous lunules adjoining, and finally a narrow marginal black streak: the cilia in all the wings are black and white.

This lovely insect, the Pa. Eos of Haworth, or the Pa. *Pyronia* of Hübner, was captured near London (I believe at Peckham), in June, 1803, and is by Oehsenheimer reputed to be a variety only of the preceding species, and I think not without reason, as its chief distinction appears to consist in the greater intensity of the black markings on the posterior wings above, and on the bases of both wings below, characters which frequently accompany the individuals of the group of Nymphalidæ called Fritillaries; but until connecting varieties are obtained, it is better to follow Mr. Haworth's views, and doubtingly to consider it distinct from Me. *Athalia*.

† Sp. 3. *tessellata*. PLATE V. f. 1, 2.—*Alis supra fulvis nigro tessellatis, posticis subtus stramineis fasciis tribus flavidis lunulisque nigris*. (Exp. alar. ex fig. *Petiv.* 1 unc. 8 lin.)

Pap. *fritillaria tessellata serotina subtus straminea*. *Petiver, pl. 3. f. 11, 12*.—Me. *tessellata*. *Steph. Catal.*

Similar in size and shape to Me. *Athalia*, but evidently distinct: the wings are rather paler above: the anterior more fulvous beneath: the posterior are very dissimilar to those of the above insect, being entirely straw-coloured, with black nervures: at the base are three large square yellowish spots surrounded by black: an arcuated band in the middle composed of yellowish somewhat quadrate spots, which are nearly confluent, and placed in a double row, and edged with black: there is then a streak of black lunules pointing outwards: then a marginal band composed of yellowish spots encircled with black, each yellow spot being a black lunule: the cilia are white, intersected with black.

Through the kindness of my friend Mr. Westwood I am enabled

gratuitously to present my readers with fac-similes of this and another apparently lost species of Papilionaceous insects which are depicted in the rare "Papiliones Britannicæ," &c. by Petiver. From the general accuracy which characterises this author's figures, there is no doubt of this insect being distinct from *M. Athalia*, which is figured by him as the *Pap. tessellata serotina subtus albida*; and as his *Pa. tessellata serotina subtus straminea* has not been observed in modern times, I have, at the suggestion of Mr. Haworth, who kindly offered the use of his copy of the work for the purpose, republished Petiver's figures, tinted, in his rough style, and resembling the present appearance of the originals, in order to obtain some information relative to the existence of the species in these days. In Petiver's time it was, as he informs us, "pretty common in Cain-wood." From its close approximation to *Me. Athalia*, I have no hesitation in referring it to the present section.

B. Palpi incrassated, the second joint not cylindric, sometimes very broad and fusiform, the terminal joint minute, ovate.

♂. *Wings fasciated with yellow or ochraceous beneath.*

Sp. 4. *Artemis*. *Alis supra fusco-nigris, fulvo flavidoque tessellatis, posticis subtus fulvis fasciis tribus ochraceis, strigisque punctorum subocellatorum utrinque.* (Exp. alar. 1 unc. 4 lin.—1 unc. 11 lin.)

*Pa. Artemis*. *Linneé.—Don. vii. pl. 242, f. 1.—Me. Artemis Steph. Catal.*

Wings above reddish-fulvous, undulated with black, and spotted with yellowish: the posterior with three distinct bands, of which the intermediate is fulvous, and bears a striga composed of from four to seven black dots: the under surface of the anterior wings is glossy, and is very obscurely marked as above, but the black is nearly obliterated, and at the tip are some ochraceous dashes: the posterior wings beneath are fulvous, with three transverse ochraceous yellow bands usually and slightly edged with black: the basal band is irregular and broken, the central bent and entire, the third marginal and composed of lunules: between the outer bands is a row of seven black dots, obsoletely edged with ochraceous: the cilia are yellowish, interrupted on the anterior wings by dusky: the body and antennæ are dusky.

Var. *β*. With the base and posterior margin of all the wings brown-black: the anterior wings tessellated with fulvous and whitish.

Var. *γ*. With the wings similar to the last at the base: the anterior with three oblong fulvous spots near the costa, towards the middle: then a fulvous fascia composed of very narrow elongated longitudinal stripes: a waved band composed of quadrate fulvous spots, and a black marginal band bearing lunulated fulvous spots: beneath similar to the first described.

Var. *δ*. Posterior wings beneath, with the irregular basal band, totally obliterated, the central band not edged with black externally.

Var. *ε*. The posterior wings beneath, with the basal half fulvous, the exterior half ochraceous, with an obsolete row of black spots.

The caterpillar is black above and yellowish beneath, with a longitudinal row of small white dots on the back and on each side: the head and spines are black: the legs red-brown. It feeds on the devil's-bit scabious (*Scabiosa succisa*) and on various kinds of plantain; it makes its appearance in September, and the young brood keeps together under a web, in which it passes the winter; about the end of April the caterpillar is full grown, and changes to the chrysalis, which is of a greenish-white, spotted with black, with yellow tubercles at the extremity of the body; the butterfly is produced in about fifteen days.

A local species, rare near London, but particularly abundant near Brighton, and at Enborne in Berks: it also occurs near Norwich—in Clapham-park, Bedfordshire—in Dorsetshire—in Glamorganshire—at Eriswell and Mildenhall, in Suffolk—Dartmoor, in Devonshire—and at Beachamwell, in Norfolk, usually towards the end of May.

Sp. 5. *Cinxia*. *Alis supra fulvis, nigro-reticulatis, posticis subtis fasciis tribus flavescentibus, nigro-maculatis, strigisque punctorum subocclatorum utriusque.* (Exp. alar. 1 unc. 9—11 lin.)

Pa. *Cinxia*. *Linné*.—*Lewin*, pl. 14.—*Me. Cinxia*. *Steph. Catal.*

Wings above yellowish-fulvous, prettily reticulated with black; the posterior with four or five black dots, placed transversely, in each of the fulvous spots, towards the anal angle of the wing: the cilia above white, interrupted by black: beneath, the anterior wings are brighter than above, with a few black markings, the tip yellowish, with a double series of black dots, the inner one waved; posterior wings with three yellowish angulated bands, edged and spotted with black, and two irregular tawny-orange ones, the basal one very irregular, and the other with a row of ocellated spots, with a black pupil and

† Sp. 6. *Maturna*. *Alis purpurascens nigræ-maculatis; subtis fasciis tribus flavis.* *Linné*.

Pa. *Maturna*. *Linné*.—*Me. Maturna*. *Steph. Catal.*

Wings above fulvous, tessellated with black and white; beneath saffron-red, with three yellow fasciæ, the first interrupted and composed of four or five irregular spots; the second with greenish spots; the third marginal, composed of lunules.

Caterpillar black, shining, with three spotted yellow lines, one dorsal, two lateral; it feeds on plantain, aspen, willow, beech, &c.; chrysalis whitish-green, spotted with black and yellow.

I have no doubt this insect has been erroneously introduced into our *Famia* (by Stewart), in consequence of *Linnæus* referring to *Wilkes's* table 11. fig. 9. for a figure; as there is no authentic instance of *Me. Maturna* having been found in Britain: the insect figured by *Wilkes* being *Me. Athalia*.

yellowish iris, corresponding with the series on the upper surface; cilia yellowish, interrupted with black: body black above, yellowish beneath: antennæ brownish above, interrupted with whitish, which last colour predominates beneath.

Caterpillar black, spotted with white: the head and prolegs fulvous: the legs and spines black. Chrysalis stout, black, sprinkled on the ventral segments with grayish dots, and on the back with fulvous tubercles: the perfect insect appears in about a month. The caterpillar feeds on various kinds of plantain, on ribwort, speedwell, mouse-eared hawkweed, &c.; it is produced in the autumn, and lives throughout the winter in society, beneath a silken web, and in April it becomes full grown and changes to a pupa; it is much subject to the attacks of ichneumonidæ and muscidæ.

This is a very local species, and is found in meadows by the sides of woods: in Wilkes's time it was not uncommon in Tottenham-wood: recently the places where it has been chiefly observed have been near Ryde and the Sandrock hotel, Isle of Wight; in the latter place in plenty: also at Birch-wood, and near Dartford and Dover, and in a wood near Bedford. I believe it has been found in Yorkshire; and from Ray, p. 121, it would appear to have been abundant in Lincolnshire in his time. It generally flies in June.

*b. Posterior wings more or less spotted with silver.*

Sp. 8. Selene. *Alis fulvis, nigro-maculatis, posticis subtilis ferrugineo flavidoque variegatis, maculis argenteis ocelloque nigro pupillâ rufâ, strigâque posticâ c punctis atris.* (Exp. alar. 1 unc. 8—11 lin.)

Pa. Selene. Fabricius.—Pa. Euphrasia. *Lewin, pl. 13.*—Me. Selene. *Steph. Catal.*

Rather less than the next, which it closely resembles on the upper surface, but

‡ Sp. 7. Dia. *Alis fuscis, testaceo-maculatis; subtilis maculis quatuor orlinibusque punctorum duobus argenteis.* Linné. (Exp. alar. 1 unc.—10 lin.)

Pa. Dia. Linné.—Stewart.—Me. Dia. *Steph. Catal.*

Wings above fulvous, spotted with black; the base of the posterior nearly black; beneath, the latter are purplish, with six or seven small silvery spots at the base, intermixed with minute yellowish dots; a band composed of silvery and yellowish spots, then a purplish-white streak, in which is a series of circular spots, slightly pupillated; and finally, in the margin is a series of silvery lunules: the cilia are whitish, interrupted by brown.

Caterpillar black, the back griseous with a longitudinal line, the spines alternately white and reddish: it feeds on the *viola odorata*: chrysalis yellowish, varied with black.

Stewart appears to have introduced this species; but he does not give any authority for so doing. I have a reputed English specimen, but as I cannot vouch for its authenticity, it is better to remain silent. Like the other two species of this section, Me. Dia is double-brooded on the continent.



the under surface, especially of the posterior wings, is very dissimilar: their ground colour is ferruginous, with a brighter band at the base, which is bordered on each side with a row of irregular silver and yellow spots, forming two bands, and has in its centre a large black ocellus, with a rufous pupil; the rest of the wing is varied with ferruginous and yellowish, with about three silvery spots, placed transversely; on the inner and anterior margins a striga composed of black dots; and lastly six conical silver spots, edged internally with black: the cilia of all the wings are yellowish, interrupted with brown: the anterior wings are more distinctly varied with black than in *Me. Euphrosyne*, and the hinder margin is more strongly tipped with ferruginous or deep brown, and has a very distinct row of conical black spots, pointing inwards.

‡ Var. *β*. With the upper surface of the wings whitish.

Caterpillar black, with a clear lateral stripe; spines half yellow.

A very common and beautiful insect; occurring on heaths and in woods throughout the southern parts of Britain, being frequently met with so far west as Dartmoor, in Devon: the first brood appears in May, the second in August.

Sp. 9. *Euphrosyne*. *Atis fulvis, nigro-maculatis; posticis subtus rufa flavoque variegatis, maculis novem, harum septem marginales, argenteis, ad basin ocelli flavo pupilla nigra.* (Exp. alar. 1 unc. 9—11 lin.)

Pa. *Euphrosyne*. Linné.—*Don*, xi. pl. 312.—*Me. Euphrosyne*. *Steph. Cat. l.*

Wings above pale fulvous, irregularly spotted with black at the base, with a row of round black spots near the hinder margin, then a row of conical spots, the points inward, and finally, a marginal series of dusky spots, bounded by a slender black line: cilia yellowish, interrupted with black: the anterior wings beneath are rather brighter than above, and are spotted irregularly with black towards the middle; the tip is rather ferruginous, with yellowish patches: the posterior wings at the base are rusty-red, with one or more silvery, and some yellowish spots, and a yellowish ocellus with a black pupil; towards the centre is a bent fascia, composed of irregular yellow spots, and one longitudinal, somewhat wedge-shaped, silvery one in the middle, followed by a broad band, varied with ferruginous and yellowish, in which is an obsolete series of fuscous spots; finally, the posterior margin is ornamented with seven subconical silvery spots: cilia yellowish, interrupted by brown: body dusky above, grayish beneath: antennæ black, ringed with white, with the tip of the club fulvous.

Var. *β*. With the marginal fascia of silvery spots on the posterior wings wanting.

Var. *γ*. With the basal half of all the wings above black, spotted with fulvous; with large black spots on the anterior wings beneath.

‡ Var. *δ*. With the ground colour of all the wings, both above and below, pale fulvous yellow.

‡ Var. *ε*. PLATE IV. \* f. 3.—Wings above pale fulvous, irregularly spotted with black: anterior beneath pale, varied with yellowish and ferruginous

towards the tips, with some obsolete black and dusky spots on the disc: posterior wings variegated with ferruginous, yellowish, and greenish, with the pupil of the ocellus very large, the discoidal silvery spot produced to the hinder margin, and the usual marginal spots lengthened inwardly; the usual fasciæ are obliterated, but the silvery spot at the base is somewhat apparent. Caterpillar black, with two dorsal spotted orange stripes: it feeds on the *viola montana*.

Like the preceding species, this is a very generally distributed insect, and is found throughout the southern parts of Britain; it also occurs in the neighbourhood of Edinburgh: the first brood appears towards the end of May, and the second towards the approach of autumn. I have no doubt of the varieties  $\delta$  and  $\epsilon$  belonging to this species, although others are of a contrary opinion: the latter is the Pa. *Thalia* of the Entomological Transactions, vol. ii. p. 333; but the Pa. *Thalia* of the continental writers is referred by Ochsenheimer and Godart to *Me. Selene*.

#### GENUS X.—ARGYNNIS, *Fabricius*.

*Palpi* ascending, long, divaricating, hairy, three-jointed, basal joint moderate, curved upwards, second elongate, very broad, terminal very minute, slender, acicular: *antennæ* with a short, abrupt, compressed club: *anterior wings* triangular, *posterior* suborbicular; both somewhat dentate: *anterior legs* imperfect; *tarsi* with double nails. *Larva* spiny. *Chrysalis* subangular: generally with metallic spots.

The oral organs of the *Argynnes* greatly resemble those of the two last sections of the *Melitææ*; nevertheless the insects of this genus may be readily distinguished from those of the preceding by the superior breadth of the wings, as well as the dissimilar form of the terminal joint of the palpi when denuded. In the *Melitææ* this joint is of an ovate form, and rather obtuse, whereas in the *Argynnes* it is conical, slender, and acute; the proportions of all the joints are very similar, as well as the compressed form of the second: the palpi of *Ar. Lathonia* closely approximate to those of *Me. Euphrosyne*. Were the number sufficiently great, it would be advisable to divide the indigenous species into sections; but as there are four (or five) only, I shall simply observe that *Ar. Lathonia* differs from its congeners by the male being destitute of the dilated nervures so conspicuous in that sex of the other species, while in its habits it differs in being double-brooded, and in appearing periodically.

Sp. 1. *Lathonia. Alis fulvis, distinctè nigro-maculatis; posticis subtùs maculis*

*numerosis argenteis, strigâque ocellorum septem ferrugineorum pupillâ argenteâ.* (Exp. alar. 1 unc. 10 lin.—2 unc. 1 lin.)

Pa. Lathonia. *Linnc.*—*Don*, iii. *pl.* 73.—*Ar.* Lathonia. *Steph. Catal.*

Wings above tawny-orange, distinctly spotted with black, with the base powdered with greenish: anterior beneath spotted as above, but paler, with the tip brown and bearing seven or eight more or less distinct silvery spots: the posterior wings are yellowish, varied with brown beneath, with above twenty-two silver spots of a very unequal size and dissimilar form, of which about fifteen are placed between the base and the middle of the wings, and seven on the posterior margin: between these groups are seven ocellated spots of a dusky-brown, with silver pupils: cilia on all the wings above whitish-fulvous, interrupted with black; beneath fulvescent, with a few dusky spots.

Caterpillar gray-brown, with a white line down the back, and spotted with black, with two brownish-yellow lateral lines: the spines and legs pale yellow. Chrysalis anteriorly dull-brown, posteriorly greenish, sprinkled with gold and silver spots: a white streak at the end of the wing-cases:—the perfect insect appears in about fifteen days. The caterpillar feeds on the *Viola tricolor*, *Hedysarum onobrychis*, and *Anchusa officinalis*.

The effulgent metallic brilliancy of the silver spots which adorn the posterior wings of this beautiful insect beneath, renders it pre-eminently conspicuous in our collections; and its peculiar rarity contributes to the value of its acquisition. Previously to the year 1818, few cabinets possessed even a single specimen; and from the very few known instances of its capture (six only, according to Mr. Haworth), there is reason to believe that some of the specimens at that time placed in collections were foreign; but in the

‡ Sp. 2. Niobe. *Alis fulvis, nigro-maculatis, posticis subtis maculis pallidis, seu argenteis, strigâque ocellorum ferrugineorum pupillâ argenteâ.* (Exp. alar. 1 unc. 8 lin.)

Pa. Niobe. *Linnc.*—*Stewart.*—*Ar.* Niobe. *Steph. Catal.*

Wings fulvous, spotted with black, with the base above dusky: beneath, the anterior wings are similar, but the spots are smaller, and the base clear; the posterior wings are buff-colour, variegated with ferruginous, with silvery or yellow spots, with a series of ferruginous ocelli, with silvery pupils.

Caterpillar brownish, with orange-brown head and legs, a white dorsal stripe powdered with black, a black lateral stripe, and a whitish triangular spot on the side: spines whitish and reddish alternately.

Stewart gives this as a British species, but without any authority: I may, however, add, that among the insects purchased by Mr. Dale, from the professed indigenous collection of the late Dr. Abbot, of Bedford, was a single specimen of this species, which was considered by the Doctor as a variety of *Ar. Adippe*; but there was no history attached to the specimen.

above remarkable year for the appearance of certain papilionaceous insects, this species occurred simultaneously in several, and very distant, parts, having been taken in August by Mr. Haworth at Halvergate, in Norfolk; by Mr. Vigors, in Battersea-fields; by myself at Dover, and during that and the following month near Colchester; Birch-wood, Kent; and Hertford in plenty by others. At the latter place I saw several specimens, but was not fortunate enough to secure any. In Petiver's time it was not very rare in Gamlingay-wood, Cambridgeshire, in May; but all the recently recorded British examples have occurred towards the autumn; whence it would appear to be double-brooded, a fact which is apparently corroborated by the captures of 1818. The first specimen (a female) I caught on the 12th of August, sporting at the foot of Shakspeare's Cliff, was in a very faded state, and had evidently been "winging its way" for many weeks: a pair which I took on the 14th, in the Castle-meadow, Dover, were also in a faded condition: whereas the specimens taken near Birch-wood, at the end of September, were remarkably fine. Godart, however, tells us, that the last autumnal specimens hibernate and reappear in the spring—an anomalous event amongst the Fritillaries, thereby approximating in habits to the *Vanessæ*.

Sp. 3. *Adippe*. *Alis fulvis nigro-maculatis, posticis subtilis ferrugineo-flavidis maculis plurimis argenteis, strigisque ocellorum ferrugineorum, ter vel quatuor, pupillâ argenteâ.* (Exp. alar. 2 unc. 6—9 lin.)

Pa. *Adippe*. *Linneé*.—*Lewin*, pl. 10.—Ar. *Adippe*.—*Steph. Catal.*

Wings above fine orange-tawny, with the base sprinkled with greenish, with one unequal zigzag black streak passing through the middle, followed posteriorly with a transverse row of round black spots, of very unequal sizes, and, in some specimens, one or more wanting; then a series of lunules of the same colour pointing outwards; the margin black, with a row of narrow fulvous dashes: on the costa of the anterior wings, towards the base, are four irregular dashes, resembling the figures 1358 (as rudely sculptured about that period of the christian era), and on the posterior wings is a horseshoe-shaped black dash, sometimes accompanied by a round spot placed internally: beneath, the anterior wings differ in being less brilliant, and in wanting the greenish base; the exterior black border is wanting, and at the tip are a few silvery spots: the posterior wings are ferruginous, varied with yellowish, with six or seven different shaped dispersed silver spots near the base; then a zigzag band of seven square silver spots, the central one smallest, followed by a streak of about seven rusty-red round spots, some of which have silver pupils; lastly, a marginal band of seven rather conical silver spots, entirely edged with ferruginous: the costa at the base, the abdominal areolet, and the tip of the fol-

lowing, are also silver: beyond the marginal band of lunules the wing is pale fulvous: the cilia above fulvous, interrupted by black, beneath buff-colour, spotted with ferruginous: body dusky above, yellowish-white beneath: antennæ brownish, with the tip of the club tawny. The male is usually lighter in colour, and is distinguished by two dilated discoidal nervures on the anterior wings.

Var. *β*. The silver spots on the tip of the anterior wings, and the lunulated spots on the margin of the posterior, replaced by buff-colour.

† Var. *γ*. The anterior wings on both surfaces with a large black patch in the centre, formed by the confluence of the black spots.

Caterpillar fine red or olive-green, with a white dorsal line, edged with black dots: it feeds on the *Viola odorata* and *V. tricolor*. Chrysalis reddish, spotted with silver:—the perfect insect appears in about fifteen days.

Not quite so abundant as *Ar. Aglaia*, but frequently met with in the woods near London, at the end of June and throughout July. It is also found in Essex, Suffolk, Norfolk, Bedfordshire, Berks, Dorset, Devon, and Hants; in the latter county very commonly in the New Forest.

Sp. 4. *Aglaia*. *Alis fulvis, nigro-maculatis, posticis subtis virscenti-flavidis maculis plurimis argenteis.* (Exp. alar. 2 unc. 4–10 lin.)

Pa. *Aglaia*. *Linne.*—*Lcwin*, pl. 11.—*Ar. Aglaia.*—*Steph. Catal.*

Very similar to *Ar. Adippe* above, but rather paler, with the marginal band on the wings more distinct: anterior wings beneath also resembling those of the preceding insect, with the tips greenish, and bearing more silver spots on the hinder margin: posterior wings green, with the anterior margin of the costal areolet, the marginal half of the inner abdominal areolet, and the tip of the following one, silver; at the base of the wing are six or seven silver spots, of which the three basal ones are smallest; behind these, and parallel with the hinder margin, is a bent band, composed of seven unequal silver spots; and on the margin is another band of seven equal silver spots, the latter edged with green, the former with a narrow black line on their anterior margin: between the two rows of silver spots there is a clear yellowish-buff fascia, and a spot of the same colour towards the centre of the wing: body and antennæ as in *Adippe*: the male has also two dilated nervures on the anterior wings, and the female is distinguished by being darker, and having a row of yellowish spots on the marginal band of the wings.

‡ Var. *β*. Similar to var. *α*, except that one of the numeral characters on the costa of the anterior wings on both surfaces is obliterated by its confluence with the next; and the six basal silver spots on the under side of the posterior wings are united into three larger ones.

‡ Var. *γ*. Similar to the last beneath; but each spot of the series of round spots, which run parallel with the hinder margins of both wings, is united with the corresponding marginal lunule, giving the appearance of a series of busts on the edge of the wings.

Caterpillar dusky, with a pale line down the back, and a row of eight square red spots along each side: it feeds solitarily on the *Viola canina* (dog's violet). Chrysalis red, varied with brown.

A common species throughout the south of Britain, which I have received from Devonshire, and captured in plenty at Dover, and in several intermediate places. It affects woods, meadows, heaths, and downs, and is found in July and August. The varieties  $\beta$  and  $\gamma$  are both referable to the Pa. *Charlotta* of Haworth; the former being the description of the typical variety, the latter that of an evident variety of Ar. *Aglaia*, beautifully exhibiting the variable nature of this species and the insufficiency of the mere confluence or absence of spots or lines to constitute a specific difference.

Sp. 5. *Paphia*. *Alis fulvis, nigro-maculatis, posticis subtilis virescentibus fasciis quatuor argenteis.* (Exp. alar. 2 unc. 8 lin.—3 unc.)

Pa. *Paphia*. *Linné.—Lewin, pl. 9.—Ar. Paphia. Steph. Catal.*

Wings above fulvous in the male, virescent in the female, with numerous longitudinal and transverse black lines and bars, and a triple series of marginal black spots: anterior wings beneath paler and less spotted, particularly at the tips, which are greenish; the posterior wings are greenish beneath, with four irregular narrow pale-silvery waved bands, the first and second of which are anteriorly abbreviated, the third below the middle, reaching to the anal angle of the wing, the fourth marginal: between the two last bands is a series of ocelli, with a green iris and pale pupil, and on the margin is a row of green crescents: the cilia of all the wings above are fulvous interrupted by black, beneath paler, interrupted by ferruginous: the body is fulvous above, grayish beneath: the antennæ are brownish, with the club black, tipped with fulvous.

† Var.  $\beta$ . Female with the wings above deep virescent, with some whitish spots at the tips of the anterior.

The male has four dilated longitudinal nervures on the anterior, and two on the posterior wings: the female is greenish above, and the spots are usually larger than in the male.

Caterpillar brownish, with a longitudinal line of yellow spots on the back:—it feeds solitarily on the *Viola canina* (dog's violet), *Rubus idæus* (raspberry), and *Urtica dioica* (nettle). The chrysalis is grayish, with golden protuberances.

An abundant species in woods and meadows, and generally distributed throughout the south. It delights in settling on bramble-blossoms.

#### GENUS XI.—VANESSA, *Fabricius*.

*Palpi* contiguous, porrected obliquely, terminated gradually in a point, and

resembling a beak, thickly clothed with scales and hair, three jointed, the basal joint short, curved upwards, second long, attenuated at the apex, third as long as the basal, somewhat acicular: *antennæ* with an abrupt, subcylindric, short club: *wings* more or less angulated at the hinder margin: *posterior* very hairy above, towards the inner edge: *anterior legs* imperfect, very hairy, resembling a tippet: *tarsi* apparently with large double nails, or furnished with an unguiform process in addition to the claws: *eyes* very pubescent. Caterpillar with long dentate spines, the first segment unarmed. Chrysalis very angular, with the head strongly bituberculated; usually adorned with metallic spots.

The genus *Vanessa* contains the most vigorous and active of the British papilionaceous insects, which are no less distinguished by their boldness than by their superior size and the gaiety of their colours:—their angulated anterior wings at once distinguish the typical species from the *Cynthia*, but the form of the club of the antennæ, and the difference in the structure of the palpi, as well as the dissimilar armature of the larvæ, and more angular form of the pupæ, appear to demand the separation of the latter genus from the present. It is with reluctance that I retain *C. album* and *Atalanta* in the genus, as the structure of their palpi and the form of their wings are decidedly unlike that of the typical species, and their habits are slightly dissimilar; but, for reasons formerly related, I shall consider them merely as constituting sections. All the species hibernates.

(*Pa. Levana*, Linné, evidently belongs to a genus distinct either from *Vanessa* or *Cynthia*: but from the rotundity of the anterior wings, combined with the anastomosing colouring of all the wings beneath, I have placed it in the latter genus, notwithstanding the armed neck and gregarious habits of the larva. I may here remark that the attention of entomologists does not appear sufficiently alive to the advantages resulting from the valuable subsidiary character derived from colour, which the recent observations of zoologists have satisfactorily proved is of more importance in pointing out groups than usually supposed\*. I do not, however, wish to lay too much stress upon such a precarious diagnostic, but merely throw out the hint that future observers may pronounce upon its merits, previously observing, that a very transient glimpse of a naturally arranged collection of lepidopterous insects clearly exhibits the prevalence of particular colours in each group, and the gradual manner in which they are blended in the conterminous genera.)

A. Anterior wings narrow, irregularly sinuated; posterior dentate, with a short tail: palpi densely clothed with scales, with a few short hairs. Caterpillar with the head bituberculate, gregarious.

\* Vide Vigor's Obs. on *Psittacus*. *Zool. Journ.* v. ii. p. 48, &c

Sp. 1. *C. album*. *Alis suprâ fulvis, nigro-maculatis, posticis subtùs C. albo notatis.* (Exp. alar. 1 unc. 9 lin.—2 unc. 1 lin.)

Pa. *C. album*. *Linué.—Lewin, pl. 5.—Va. C. album. Steph. Catal.*

Wings above fulvous, or dark orange, spotted with black and brown, with a brown posterior margin; black spots on the anterior wings, in form, shape, number, and disposition similar to those on the following species: beneath, the anterior wings are dusky-brown, with a broad, irregular, green-marbled, pale band near the posterior margin: posterior wings very similar, with a reversed snowy-white C in the middle: near the posterior margin of all the wings is an irregular series of spurious ocelli, with a black pupil and green iris: body above dusky, with greenish hairs on the thorax: antennæ black above, brown annulated with white beneath, with the tip of the club yellowish.

Var.  $\beta$ . With the wings beneath uniformly dusky, without the pale band near the posterior margin.

Var.  $\gamma$ . All the wings beneath brown, with ochraceous bands beneath.

All the varieties have a white C beneath, which is more or less attenuated, and angulated, in different specimens.

The caterpillar is red-brown, with the back anteriorly yellow, posteriorly white: it feeds chiefly on the hop, and also on elm, willow, nettle, gooseberry, currant, hazle, and honeysuckle. The chrysalis is flesh-coloured, contracted in the middle, and spotted with gold: when viewed laterally the anterior part bears a rude resemblance to the human face in profile, or rather, as observed by Latreille, to that of a satyr as fabled by the mythologists.

This species has become somewhat scarce every where within these few years. Prior to 1813 I used to find it very abundantly near Hertford, but since that period I have not seen it;—it has, however, occurred during the last and present seasons in several parts of the country; and it appears to be generally distributed over the southern half of the kingdom\*, frequenting woods, thickets, and gardens. There are two broods in the year; the first appearing towards the end of June, the latter about the middle of September.

B. All the wings angulated, posterior with a short tail; colours beneath sombre: palpi clothed with hair, with a few scales intermixed. Caterpillars with simple heads, gregarious.

Sp. 2. *Polychloros*. *Alis suprâ fulvis, nigro-maculatis, posticis margine postico nigro, lunulis cæruleis; alis omnibus subtùs cinereis nigro-fasciatis.* (Exp. alar. 2 unc. 4 lin.—3 unc.)

Pa. *Polychloros*. *Linué.—Lewin, pl. 2.—Va. Polychloros. Steph. Catal.*

Wings above dark orange, with the base dusky, and furnished with greenish hairs: the anterior with two transverse abbreviated costal fasciæ, separated by yellow ochre; between which and the base is a somewhat ovate black spot: on the disc are two roundish spots, and near the interior margin two

\* Mr. Backhouse informs me that it is abundant near York.



other larger spots: the hinder margin is black, with a series of pale crescents: the posterior wings dusky at the base, with a large black costal spot; adjoining which is a yellowish patch: the margin is black, with obscure bluish crescents; the margin itself is brown, with two parallel pale lines, as in all the wings of *Va. Urticæ*: interiorly the wings are furnished with long tawny or greenish hairs: beneath, all the wings are clouded with black, with a broad, common, ash-coloured, clouded fascia behind, in which is a series of obscure bluish lunules: the anterior wings have three pale equidistant spots on the costa, and the posterior a white discoidal dot: the body is dusky, clothed with tawny hairs: the antennæ black, with the tip yellowish.

Var.  $\beta$ . The anterior wings with a long black dash on the interior (or thinner) edge, as in the female of *Pontia Brassicæ*.

Var.  $\gamma$ . The spot at the base of the wing divided in two.

Var.  $\delta$ . Similar to the last; but the posterior wings with a series of round black spots, within, and parallel with, the marginal fimbria.

The caterpillar is bluish or brownish, with a yellow lateral stripe, with the spines slightly branched and yellowish. It feeds chiefly on the elm; and while young, the brood continues under a silken web, dispersing after the first change. The chrysalis is flesh-coloured, with golden spots on the neck.

This insect is also one of those which occasionally appear in profusion: during the past season it has been particularly abundant near London, occurring in plenty in Copenhagen-fields, and near Ripley, in Surry, last July. I captured in April last some faded specimens at the latter place, which had been produced in the preceding year: near Ramsgate, Deal, and other parts of Kent, and also in the vicinity of Hastings, and in the New Forest, it likewise occurred during the past summer. It usually frequents woody places and lanes where elms abound. There is but one brood, which appears about the middle of July.

Sp. 3. *Urticæ*. *Alis supra testaceo-fulvis, nigro-maculatis; busi nigro, marginæque postico nigro, lunulis cæruleis.* (Exp. alar. 1 unc. 10 lin.—2 unc. 4 lin.)

Pa. *Urticæ*. *Linné.—Lewin, pl. 3.—Va. Urticæ. Steph. Catal.*

Wings above orange-tawny, with the base, and the hinder margin throughout, black, the latter with a series of blue crescents; the margin itself is brown, with two parallel pale lines: the anterior wings above have the costal arcollet mottled with black and tawny: on the costa are two large subquadrate black spots; at the base two others, placed obliquely; and posteriorly, on the disc, two small round ones: between the two large costal spots and the anterior basal one are two yellow spots, and between the second basal spot and the anal angle is a third: towards the tip of the wing adjoining the posterior costal spot is a white one: the posterior wings are black at the base, powdered with tawny, and covered with long tawny hairs: beneath, the anterior wings are pale, variegated with black, with the tip sprinkled with brown, and the hinder margin with black lunules: the posterior wings are black at

the base, with a minute whitish discoidal spot, and a pale band marbled with brown, in which, towards the margin, is a series of angular black spots: the body is dusky, with a greenish pubescence: the antennæ are annulated with black and white, with the tip of the club ochraceous.

Var.  $\beta$ . With the two round discoidal black spots on the anterior wings obliterated. The caterpillar is dusky, with two greenish-yellow lines on the back, and one on each side: it feeds when young in society, but generally disperses after the first change. The chrysalis is grayish, with golden spots on the neck, sometimes entirely golden.

This elegant and very common species occurs throughout the kingdom in gardens, lanes, &c. and is produced twice in the season, about the end of June and beginning of September.

Sp. 4. Io. *Alis supra brunneo-rubris, singulis ocello cæruleo, anticis maculis duabus costalibus nigris, omnibus subtus atro-nebulosis.* (Exp. alar. 2 unc. 6 lin.—3 unc.)

Pa. Io. *Linné.*—*Lewin, pl. 4.*—Va. Io. *Steph. Catal.*

Wings above red-brown, or purplish, with the base and hinder margin dusky-ash: costal areolet black, with transverse pale-yellow streaks: anterior margin with two large triangular black spots, with a yellow one between, and a large ocelliform spot adjoining the posterior edge of the one towards the apex of the wing; this ocellus is anteriorly yellow, posteriorly blue, streaked with three bluish-white dots, and has for a pupil a large reddish-brown spot, darker anteriorly: there are also two other bluish-white spots, forming a continuous series parallel with the hinder margin, with the three which are placed in the ocellus: the posterior wings have towards the margin a large ocelliform spot, with a large black pupil spotted with blue, and a gray iris, terminated interiorly with a black crescent: beneath all the wings are glossy brown, marbled, banded, and spotted with black; the anterior with five minute white dots, corresponding with those on the upper surface, and the posterior with a single discoidal spot: the body is dusky, with rusty down: the antennæ black above, brown beneath, with the tip yellowish: the legs are ochraceous.

The caterpillar is glossy black, spotted with white, with the hinder legs ferruginous: it feeds on the *Urtica urens* and *dioica*. The chrysalis is green dotted with gold: the butterfly appears in about a fortnight.

Va. Io is a very abundant and highly beautiful species, occurring in plenty in lanes, commons, woods, and fields, where nettles and thistles abound, throughout the southern portion of the kingdom about the end of July, and continuing till the following spring. Haworth states in his useful *Lepidoptera Britannica*, that only two instances of its capture had occurred in Yorkshire. I am, however, informed by Mr. Giles that it is plentiful in the New Walk, York; and by Mr. Backhouse that it is very abundant in the vicinity of that city.

Sp. 5. *Antiopa*. *Alis utrinque nigris, limbo posteriori maculisque duabus posticis ad costam albidis seu flavidis.* (Exp. alar. 2 unc. 10 lin.—3 unc. 2 lin.)

Pa. *Antiopa*. Linn. ii. 776.—Lewin, pl. 1.—Va. *Antiopa*. Steph. Catal.

Wings above reddish-black, or purplish, with a broad, velvety-black, posterior band, in which is a series of violet-blue spots (seven or eight on each wing); followed by a broad pale border, usually whitish or pale straw-colour; this border is waved internally, and minutely speckled with black dots, particularly on the prominent angles of the wing: the anterior wings above have the costal arcolet marked with white, with two large white spots near the tip: beneath all the wings are obscure black, with darker waves, with a whitish discoidal spot in the centre of each, and a broad white border on the outer margin: the body and antennæ are brown-black, with the tip of the club rust-coloured: the legs are ochraceous.

Var. *β*. With the border of the wings deep yellowish.

Caterpillar black, with a row of square dorsal spots, and the eight anterior prolegs red. It feeds on willows, birch, and poplar. The chrysalis is dusky, speckled with bluish, and spotted with tawny. The butterfly appears in about fifteen days.

No insect is more remarkable for the irregularity of its appearance\* than this. Till about the middle of the last century few specimens had been observed; but about sixty years since it appeared in such prodigious numbers throughout the kingdom, that the entomologists of that day gave it the appellation of the Grand Surprise. Of late it has again become unfrequent; the last times, according to Donovan, that it occurred in plenty being 1789 and 1803, a few only having been captured subsequently. At the present day it still appears to occur occasionally throughout England, as Mr. Backhouse informs me that it has been found repeatedly near Seaton, Durham—and often floating on the river Tees—and it has been taken also in the counties of Suffolk, Worcestershire, Surry, Norfolk, Essex, Berkshire, Oxford, Kent, and Cambridge, and I once saw one on a willow near Hertford.

I have adhered to the name proposed by Linné, as his orthography is not only sanctioned by high classical authorities, but it is detrimental to the progress of science to alter a name without powerful reasons.

C. Anterior wings angulated, posterior rounded and indented: palpi densely

\* In reference to this subject may be noticed the appearance, during the past season, of *Thecla Pruni* in *countless myriads* near Ripley, in Surry, where in the course of a few minutes I caught nearly two hundred specimens! Another fact worthy of recording is, the recent capture of a specimen of the rare *Catocala Fraxini* in the neighbourhood of London.

covered with scales, with a few hairs. Caterpillars solitary, with a smooth head ; feed chiefly upon seeds.

Sp. 6. *Atalanta*. *Alis supra nigris lunulis albis marginatis, anticis fuscâ rubrâ transversâ subinterruptâ utrinque, posticis marginali nigro-maculatâ.*  
(Exp. alar. 2 unc. 6 lin.—3 unc.)

Pa. *Atalanta*. *Linné.*—*Lewin*, pl. 7.—Va. *Atalanta*. *Steph. Catal.*

Wings above intense deep silken-black : the anterior with a central bent, somewhat interrupted, orange-red band, sometimes bearing a round white spot towards the anal angle of the wing : between this band and the tip is a group of six white spots and dots, the largest of which is on the costa : between these and the margin is a slight bluish wave : the posterior wings have a broad orange-red border, with a transverse series of distinct black triangular dots, and some black spots on the cilia ; the tip of the inner areolet is varied with bluish, and the black dot in the following areolet is also, in fine specimens, externally edged with blue : beneath, the anterior wings have the central band interrupted, whitish towards the anal angle of the wing, and towards the base throwing off a slender waved branch, between which and the base is a blue streak : between the band and the apex of the wing are other blue streaks ; beyond these, the three larger spots of the upper surface are depicted ; in the place of two others are two imperfect ocelli, with a white pupil and black and gray iris, and in lieu of the sixth is an irregular ochraceous lunule ; the costal areolet is black, marbled with blue : the posterior wings are most beautifully varied and mottled with black, brown, and pale fulvous, or tawny, with a pale triangular spot in the middle at the anterior margin, a band of obsolete obscure ocelli parallel with the hinder margin, and a streak of silken blue between this and the margin : all the wings, both above and below, are fringed with white, interrupted at the nervures with black : the body is black above, grayish beneath ; the antennæ are black, annulated with white, with the tip yellowish : the palpi are black above, white at the sides, and yellowish beneath.

The caterpillar is greenish, or dusky, with a yellowish spotted line on each side : it feeds on the *Urtica urens* and *U. dioica*, preferring the seeds. The chrysalis is grayish, or dusky, with gold dots.

This common species is one of the most splendid of the British butterflies ; the intense black of the upper surface of the wings being beautifully relieved by the red fascia and pure white spots, and beneath, the marmoration of the posterior wings defies the efforts of the finest pencil. It frequents lanes where nettles abound, throughout the southern part of Britain, appearing about the middle of August. It is said to be very destructive to cherries and other fruits. Mr. Haworth informs me that he once met with them so abundant, that above a dozen might be taken within the compass of two or three square yards.

GENUS XII.—CYNTHIA, *Fabricius*.

*Palpi* long, contiguous, porrected, terminated gradually in an acute point, pointing downwards, and resembling a beak, thickly clothed with scales and short hair, three-jointed; the basal joint short, curved upwards; second long, compressed, attenuated at the apex; third longer than the basal, acicular: *antennæ* with an abrupt, compressed, very short club: *wings* scalloped; anterior triangular, subfalcate; *posterior* somewhat ovate, clothed with long hairs on their upper surface within: *anterior legs* imperfect, very hairy, resembling a tippet: *tarsi* with small nails, apparently bifid, or with an unguiform appendage: *eyes* very pubescent. Caterpillar spiny. *Chrysalis* angular, with the head bituberculated, with metallic spots.

This genus chiefly differs from *Vanessa* in the form of the wings, connected with the slightly dissimilar proportion and structure of the joints of the palpi, and of the antennæ, which latter have a different club, and appear to possess a few more articulations: the larva is less spinose, and the pupa less angular. The species figured by Peñver I have introduced in this genus, as its form is more analogous thereto, than to that of the *Hipparchiæ*, with which it has been recently arranged.

Sp. 1. *Cardui*. *Alis fulvo-roseis albo nigroque variegatis, posticis infrà marmoratis ocellis quatuor.* (Exp. alar. 2 unc. 4.—8 lin.)

Pa. *Cardui*. *Linneé*.—*Lewin*, pl. 6.—*Cy. Cardui*. *Steph. Catal.*

Anterior wings above tawny-brown at the base and their inner margin; the middle fulvous, tinged with orange and red, with an irregular, angulated, transverse band, composed of three unequal black spots: the tip black, with five dissimilar white spots, of which the basal one is largest, and is placed transversely; the other four are ranged parallel with the hinder margin, in a bow, the two central being smallest and nearly round: between them and the edge is an obsolete series of white lunules: the margin is black, with brown and white dashes: the posterior wings above are tawny-brown at the base, sometimes with a paler spot, the posterior margin tawny-orange, with a triple parallel series of black spots, of which the central is composed of oblong ones; the interior of round (usually five in number), and the marginal of irregular spots: the cilia are white interrupted by black: the second areolet has at the tip a slight bluish spot: beneath, the anterior wings somewhat resemble the upper surface, but in recent specimens they are adorned with a rich carmine tint, and the base is whitish, and a white bar adjoins the black interrupted band on the anterior margin: the costal areolet is transversely streaked with black and white, and the tip is light greenish-brown, with five white spots corresponding with those on the upper surface, the two smallest of which are somewhat ocellated, having a black margin, which is broadest interiorly: the posterior wings are prettily clouded and marbled

with pale olive-brown, yellowish, and white, intersected with white veins, with four or five ocelli, corresponding with the round spots on the upper surface; the external one being usually spurious and oblong; the second and fifth the largest, with a purple pupil, and yellow iris edged with black; the two central ones with a blue pupil, edged with yellow and white: beyond these is a grayish streak, bearing a series of bluish lunules; the margin is brownish-yellow; the cilia of all the wings are white, interrupted by black: body reddish-brown above, whitish beneath; the abdomen with black rings: the antennæ are black, annulated with white, with an ochraceous tip to the club.

Var.  $\beta$ . With the anal areolet of the anterior wings above deep fuscous, and an additional white spot in the chaplet.

Var.  $\gamma$ . With the anterior wings similar above; the posterior with two distinct round spots only (pupillated with blue) in the inner series, the other three being confluent, and forming a transverse abbreviated fascia.

Var.  $\delta$ . With the anal areolet of the anterior wings above bright fulvous, the transverse black band more regularly defined: the posterior wings fulvous, varied, and slightly, but irregularly, spotted with black.

The caterpillar is brownish or gray, with yellow interrupted lateral lines: it feeds solitarily beneath a silken tissue on various kinds of thistles, and also on the nettle, millfoil, mallow, and artichoke. The chrysalis is grayish, with golden dots, and whitish brown longitudinal streaks.

Cy. *Cardui* is eminently conspicuous for the irregularity of its appearance in particular districts of the country: in the metropolitan district it occurs about every third or fourth year most copiously, breeding even in the metropolis itself; during the season of 1826 it was very abundant, and a few appeared last spring; and so late as the middle of June I saw several at Ripley in a very damaged condition. Dr. Leach informed me that he used constantly to see this insect in Devonshire; and Mr. Dale that he took it in the Isle of Bute, and on Arthur's Seat near Edinburgh. It usually appears about the beginning of August, and remains throughout the winter in the various states of egg, pupa, and imago.

† Sp. 2. *Hampstediensis*. PLATE V. f. 3, 4. *Alis supra fasciis, strigâ marginali flavâ, anticis maculis quinque flavis, omnibus ocellis duobus nigris pupillâ albâ.* (Exp. alar. (ex. fig. Petiv.) 2 unc.)

*Papilio oculatus Hampstediensis ex aureo fuscus.* *Pet. Pap. ii. pl. 5. f. 2. b.—*  
Cy. *Hampstediensis.* *Steph. Catal.*

Size and form of *Hipparchia Ægeria*: anterior wings above brown, with three spots near the costa, two spots behind, and marginal streak yellow: two large posterior ocelli, the one near the anal angle of the wing appearing on both sides, all with the pupils white with broad black irides: the posterior wings

also brown, darkest at the base, with a marginal yellow streak, and two large posterior ocelli with white pupils and black irides: beneath, the anterior wings are yellowish, clouded with dark brown, with an obsolete streak on the hinder margin composed of brown lunules; posterior wings yellowish, somewhat clouded with brown at the base, with a small nearly obliterated black ocellus, with a white pupil; at the anal angle four minute dark brown spots, between which and the hinder margin is a streak composed of dark brown crescents turned forwards.

There is something wonderful in the total disappearance of so large an insect as the above, which has been seen but once, and that upwards of a century ago: entomologists are indebted to the persevering industry of Petiver for a coloured figure, of which I have introduced a copy, in his rough, though evidently correct, style, in order to excite the attention of those of the present day to the fact of its existence or not at this period. Petiver thus notices it:—"Albin's Hampstead Eye, where it was caught by this curious person, and is the only one I have yet seen."

GENUS XIII.—APATURA, *Fabricius*.

*Palpi* longer than the head, contiguous, compressed, the points closely approximating and acute, forming a conical beak, chiefly clothed with hair, three-jointed, the basal joint short, rather stout, bent, the second slender, very long, slightly angulated interiorly, and a little bent at the base, terminal about as long as the basal, subcylindrical, obtuse: *antennæ* rather long, with an elongate, obconic, thickened club, terminating in a lateral point: *eyes* naked: *wings* nearly as in *Cynthia*, with the *basal arcelet* of the posterior open behind: *anterior legs* very short in both sexes, the rest furnished with bifid *claws*. Caterpillar fusiform, spiny, with two horns on the head. Chrysalis rather angular, compressed, gibbous, head-case beaked.

† Sp. 3. *Levana*. *Alis suprâ fulvis, nigro, flavoque maculatis, subtus reticulatis, anticis suprâ maculis aliquot albis.* (Exp. alar. 1 unc. 6 lin.)

Pa. *Levana*. *Linné.*—*Turton.*—Cy? *Levana*. *Steph. Catal.*

Wings above tawny, spotted with black and yellow; the anterior with two or three white spots: beneath all the wings are prettily reticulated with whitish yellow, and variegated with fulvous, brown, and yellowish, with a violaceous patch towards the centre of the hinder margin, in which are a few white spots. Caterpillar deep black, with red legs: head bituberculated; neck with two long spines: it lives in small societies of ten or twelve on nettles. Chrysalis dusky, with the breast pale yellow.

This insect is indicated as British by Turton, and in Rees' Cyclopædia (article *Papilio*) it is considered as a native of Britain: but no indigenous specimen exists.

In form this genus much resembles the last described; the anterior wings being exactly similar in shape, and the posterior differing but a trifle: the chief distinctions are to be found in the structure of the club of the antennæ and palpi, the former being much thickened and elongated, and the latter more slender, as well as slightly dissimilar in form; and in their natural state the tips are more closely applied to each other: the larva and pupa are, however, widely different, as are also the habits of the perfect insect.

Sp. 1. *Iris*. *Alis nigris cæruleo-micantibus, aut fuscis, fuscis communi utrinque albâ interruptâ, posticis supra uniocellatis.* (Exp. alar. 2 unc. 6 lin.—3 unc. 3 lin.)

Pa. *Iris*. *Lin.é.—Lewin, pl. 16.—Ap. Iris.* *Steph. Catol.*

Male with the wings above black, changing according to the light to a splendid mazarine blue: the anterior with ten white spots, disposed in a triple series, the first towards the inner margin, composed of three spots, the central one being lunate; the second series reaches from beyond the middle of the costa to the anal angle, and is composed of five spots, of which the three towards the costa are united and form a crescent, pointing inwards; the other series is composed of two small spots, of which the posterior is minute: the posterior wings have a white angular band, placed in continuity with the first series of spots on the anterior wings; and an ocellus at the anal angle with a narrow tawny iris, and black pupil; parallel with the hinder margin is a pale tawny streak: beneath, the anterior wings are variegated with brown, tawny, black and white, the latter colour corresponding with that of the upper surface, and the posterior margin is cinereous; between the disc and the hinder margin is an ocellus with a black iris and a bluish pupil: the posterior wings have an oblique broad white band, attenuated towards the inner margin, and with a conical tooth in the centre of its external edge; this band is bordered on each side with reddish brown, shaded into cinereous at the base and hinder margin: near the anal angle is a small ocellus, corresponding in colour with the one on the upper surface: the body is black above, cinereous beneath; the legs are of the latter colour, and the antennæ black. The female differs in being considerably larger, and in having the upper surface of the wings brown where the male is black, and is destitute of the brilliant blue reflection of the male: there are two additional minute white spots at the tip of the anterior wings.

The caterpillar is of a beautiful green, with reddish bristles at the tail, and greenish-yellow horns: it feeds on the willow: the chrysalis is of a delicate pale green.

This splendid insect justly claims the chief attention of the collectors of indigenous Lepidoptera, “the varying lustres of its purple plumes” giving it a proud pre-eminence above its fellows. Like several other butterflies, it has become unfrequent near the



metropolis within these few years. About ten years ago I saw it in plenty at Coombe-wood, in July, and a number of specimens were then taken; since that period I have not seen the insect at large near London; it has, however, been taken occasionally at Darent-wood. It was formerly not uncommon in Epping-forest, though it is evidently very local. I am informed by Mr. Dale that it occurs in Clapham-park-wood, Beds., Brinsop-copse, Herefords., Euborne-copse, Berks, near Warminster, Wilts, and Christchurch, Hants:—it is also found in several parts of Essex and Suffolk. An interesting notice of the habits is given in *Lepidoptera Britannica*, to which I must refer the reader on account of its length.

GENUS XIV.—LIMENITIS, *Fabricius*.

*Palpi* longer than the head, not contiguous, parallel, clothed with scales, and slightly hairy, three-jointed, basal joint small, oval, second long, cylindric, slightly bent, terminal longer than the basal, elongate, ovate: *antennæ* long, with a gradually produced slender, elongated, obconic club: *wings* somewhat triangular, the *posterior* slightly scolloped, with the *basal areolet* open behind: *eyes* pubescent: *anterior legs* short in both sexes, slender, with a minute claw; *posterior* long, furnished with claws and unguiform appendages. Caterpillar elongate, with obtuse spines on the back, and bundles of hair on the sides. Chrysalis subangular, gibbous beneath, head-case beaked.

*Limenitis* somewhat resembles *Apatura* in appearance, but may be discriminated by the rotundity of the hinder margin of the anterior wings and pubescence of the eyes and palpi, the latter being distant without approximating points; the club of the antennæ is more slender than in *Apatura*, and not arcuate and sub-compressed, as in *Hipparchia*.

‡ Sp. 1. Populi. *Alis fuscis albo fasciatis maculatisque; subtis luteis albo fasciatis, maculis cærulescentibus.*—Linné. (Exp. alar. 2 unc. 10 lin.)

Pa. Populi. Linné.—Stewart, ii. 125. Li. Populi. Steph. Catal.

Wings nearly concolorous, above dusky, beneath testaceous: the anterior with a few scattered white spots on both surfaces; the posterior above with an obscure interrupted white band composed of spots, behind which is a series of red lunules, bordered externally with black; beneath with a marginal row of black lunules in a bluish border, and a central interrupted bluish-white band. Caterpillar spiny, head and tail orange-coloured: feeds on the aspen. Chrysalis yellowish, with black spots.

I am at a loss to account for the introduction of this fine species into our Fauna, unless it originated from the false reference to Ray by Linnaeus, in

Sp. 2. *Camilla*. *Alis suprâ fusco-nigris fasciâ maculari punctisque albis utrinque, angulo ani rufescente.* (Exp. alar. 2 unc.—2—6 lin.)

Pa. *Camilla*. *Linné*.—Li. *Camilla*. *Curtis*, iii. pl. 124.—*Steph. Catal.*

Wings above brownish-black, obscurely spotted with black: anterior with a bent interrupted central white band, intersected with black veins; a cinereous discoidal crescent between it and the base, and three or four small white dots, two of which are at the anterior margin near the tip, one near the middle at the posterior margin, a fourth in the interruption of the central fascia; parallel with the posterior margin is a series of obscure black spots: the posterior wings are very similar, with an oblique straight central white band intersected with black veins, and terminating acutely near the anal angle, which bears an obscure reddish spot, in which are two black dots: between the fascia and the margin is a double parallel series of obscure black spots: beneath, the anterior wings are brown, clouded with fulvous; the central areolet marked with zigzag black lines, and a white spot: across the disc is a band, resembling in form that on the upper surface; and there are also white spots corresponding with those on the upper side, with a few additional

the *Systema Naturæ*. Stewart, in the place above quoted, gives it as British, and states that it is found in July, and is not common.

‡ Sp. 3. *Sibilla*. *Alis fuscis, concoloribus fasciâ albâ, subtus lutescentibus.*—*Linné*. (Exp. alar. 2 unc. 5 lin.)

Pa. *Sibilla*. *Linné*.—Li. *Sibilla*. *Steph. Catal.*—Pa. *Camilla*. *Stewart*, ii. 127.

Very similar to Li. *Camilla*: wings above deep fuscous, the anterior with five large and four small white spots: one of the former nearly central, the remaining four, with two of the lesser, forming an interrupted bent fascia across the wing: the other two spots are on the costa near the apex: a bluish spot near the base, and a series of spots of the same colour, each with an adjoining interior black one parallel with the hinder margin: the posterior wings have an oblique central white fascia, intersected with black veins, and a series of blue and black spots parallel with the hinder margin; beneath, the anterior wings are bright orange-tawny anteriorly, fuscous posteriorly, spotted with white as above, with a row of black spots parallel with the hinder margin: the posterior wings have the basal half white, tinged with bluish-green at the base and inner edge, with a fulvous-orange streak reaching from the anterior margin to the centre of the wing; the hinder portion of the wing is fuscous, with two rows of large orange-tawny spots, having a series of distinct black spots between them.—Caterpillar yellowish-green, with white hairs and red spines; a red head with two white stripes, and a lateral white stripe on the body: feeds on honeysuckles. Chrysalis green, spotted on the head and breast with silver.

Said by Stewart to be a native of Britain, no doubt by mistake, owing to the unaccountable confusion into which Fabricius has thrown the nomenclature of this and the preceding species, the two insects being so obviously discriminated by Linnæus, though his synonyma are incorrect.

ones at the hinder margin: the posterior wings at the base are internally bluish-gray, then tawny-orange, with several black zigzag lines and dots, a white band, as in the upper surface; then brownish orange with a double series of black spots, between which and the margin in the middle are some white dots: the cilia, both above and below, are white, interrupted with brown: the abdomen is dusky-black above, white beneath: antennæ black above, tawny beneath and at the tip.

Caterpillar green, with the head, legs, and tubercles reddish; it feeds on the various species of honeysuckle: the chrysalis is green spotted with gold, forked in front.

“The graceful elegance displayed by this charming species, when sailing on the wing, is greater, perhaps, than can be found in any other we have in Britain,” says Mr. Haworth,—a fact to which I can bear testimony, having frequently taken the insect at Coombe-wood in July, previously to the year 1813, since which period I have not seen it alive; a few, however, were taken near Peterborough last season, and I believe, also, near Ipswich: during the intermediate time specimens have occurred near Rye, Sussex; Hartley-wood, Essex; New Forest, Hants;—in Euborne Copse, Berks, by Mr. Dale, and at Billingbear, in the same county, by Mr. Hanson. It was formerly very abundant at Betstile-wood, near Finchley, and at Birch-wood, Kent; but has not been captured at either place for many years.—It delights in settling on bramble blossoms.

#### GENUS XV.—HIPPARCHIA, *Fabricius*.

*Palpi* various, rather longer than the head, more or less hairy, curving downward at the tip; three-jointed, the basal joints short, the second very much longer than the basal, compressed, the third mostly acicular, sometimes obovate: *antennæ* moderate or short, with a somewhat fusiform, bent, slender club: *eyes* pubescent, or naked: *wings* various; *anterior* usually triangular, *posterior* somewhat orbiculate-triangular, sometimes scolloped, with a groove to receive the abdomen; *basal areolet* closed: *anterior legs* shortest, generally hairy; *posterior* furnished apparently with double claws.—Caterpillar downy, subfusiform, tuberculated, tail bifid: chrysalis subangulated, with the head-case bifid.

Hipparchia is an extensive genus, and, as at present constituted, contains a most heterogeneous assemblage of objects, no less distinguished by their dissimilarities, than by the variations to which nearly all the species are subject:—about 80 European species are described, of which 20 are said to inhabit Britain,—but of these three or four are doubtful; they may be discriminated from the other Nymphalidæ by the structure of the club of the antennæ,

which is slender, attenuated at both ends, and distinctly curved, though in *H. Semele* and *Mæra* the form is somewhat different, the club being abruptly produced, broad and abbreviated, yet bent.

The genus may be advantageously subdivided into sections—nay, the dissimilitude of some of the species is so great that the genus itself requires to be curtailed, and some of the species consequently to be formed into distinct genera; but the time is not sufficiently mature for me to venture upon such a procedure.—I shall therefore merely observe, that the structure of the palpi varies considerably; in some species the basal joint is short and stout, in others short but slender;—again, in some the terminal joint is about one-fourth the length of the second and obtuse, while a few have it upwards of half the length of the preceding, very slender and acute:—the form and texture of the wings also vary considerably, as well as the length of the tibial spurs; and the habits of the insects differ greatly; several affecting meadows, pastures, heaths, commons, and lanes, while some frequent woods, others dry chalky hills, or grassy places on mountain tops, or the lowest boggy valleys and marshes; but all these discrepancies of habit are severally peculiar to the respective groups of which the genus is composed. The larvæ of all the species feed upon grasses.

A. Eyes pubescent: wings, especially the posterior, more or less denticulated: palpi moderately hairy:—frequent woods, lanes, and highways.

Sp. 1. *Ægeria*. *Alis fuscis luteo maculatis, anticis utrinque ocello unico, posticis supra tribus.* (Exp. alar. 1 unc. 6 lin.—2 unc.)

Pa. *Ægeria*. *Linnaë.*—*Lewin*, pl. 19.—*Hi. Ægeria*. *Steph. Catal.*

Anterior wings obsolete falcate, brown on both surfaces, with about ten yellowish spots, and an ocellus towards the tip, with a white pupil and black iris: posterior wings above brown, with one or more yellowish spots, with a series of spots, of which the three inner ones are ocellated, having a white pupil with a black iris, and surrounded by a yellowish circle; beneath they are clouded with brown, with irregular angulated brown bands, the hinder margin (in fine specimens) purplish, with a series of white dots in lieu of the ocelli of the upper surface: the cilia are yellowish, interrupted with brown: the abdomen brown above, pale beneath: the antennæ brownish above, slightly interrupted with ochraceous, of which colour the under surface is. The female is generally more spotted than the male, and the spots are larger.

This insect varies much in the intensity of its colours, particularly on the inferior surface; in some specimens the posterior wings are nearly plain griseous; in others they have a distinct broad, very irregular, darker central band; and bear 4—6 white dots on the posterior margin.

Caterpillar green with white longitudinal lines: it feeds on couch grass. Chrysalis short, green.

I presume that this, which is not an inelegant, species is found throughout Britain, as I have received it from several distant places, and I am informed by G. Wailes, Esq. that it occurs near Belford,

in Northumberland, and Hawthornden, near Edinburgh:—there are several broods in the year, the first the beginning of April, the second in June, the last in August.

Sp. 2. *Megara*. *Alis foveis, fusco-fasciatis utrinque, anticis sesquicoello, posticis suprâ ter, quatuor, vel quinque, subtùs sex.* (Exp. alar. 1 unc. 6—11 lin.)

Pa. *Megara*. *Linneé.*—*Lewin. pl.* 21.—*Hi. Megera*. *Steph. Catal.*

Anterior wings above orange-tawny, with the hinder margin and four bands, two of which are abbreviated, brown; with an ocellus having a white pupil and black iris on both sides towards the tip, generally with one or more minute ones adjoining it, the larger ocellus frequently bipupillated: posterior wings dull brown at the base, posteriorly orange-tawny, with a brown band and margin, between which is a series of black ocelli, with white pupils, varying from three to five in number, the lateral ones often blind: beneath, the anterior wings are rather paler, with four brown bands, the intermediate ones abbreviated, the exterior one frequently very much angulated; at the hinder margin is a slightly waved band, in which are often darker angular marks: the posterior wings are darkest at the base, they are clouded with cinereous, with two angular bars, the hinder of which divides the dark portion of the wing, and between it and the hinder margin is a series of six ocelli, the inner one (or sixth) being double, the pupil white, with a black iris, placed in a double gray circle; behind this is a scolloped, pale, or orange-coloured band: the cilia are white above, interrupted with brown,

‡ Sp. 3. *Mæra*. *Alis fuscis, utrinque primoribus sesquicoello, posticis ocellis suprâ tribus.*—*Linneé.* (Exp. alar. 1 unc. 11 lin.)

Pa. *Mæra*. *Linneé.*—*Stewart.*—*Hi. Mæra*. *Steph. Catal.*

Wings above brown, the anterior with a fulvous cloud, near the apex, in which is a large ocellus with a white pupil and black iris, accompanied by a similarly coloured minute one placed between it and the tip of the wing: posterior with two or three ocelli parallel with the hinder margin, and each placed in a fulvous spot: beneath, the anterior wings are brown at the base, fulvous on the disc, with a large black ocellus, corresponding with that above, surrounded by an ochraceous ring, and accompanied with a minute ochraceous ocellus, with a darker pupil, towards the tip of the wing; the hinder margin with three dusky parallel streaks: the posterior wings are brown, prettily streaked with darker zigzags, and having towards the margin a series of six ocelli, of which the first, fourth, and fifth have a white pupil and black iris, surrounded by two flavescent and two brown rings, of which colours the other three are composed; between these and the margin is an irregular pale waved band. Caterpillar bright green, with a whitish lateral stripe, or darkish dorsal line, and five whitish hairs. Chrysalis dusky.

Most probably introduced into the indigenous list by Stewart, in consequence of the Linnean references to Merret and Wilkes, by mistake for the preceding; or from Berkenhout having erroneously applied the trivial name *Mæra* to the common species.

beneath gray with dusky spots: the body is dusky above, paler beneath: the antennæ are brown, annulated with white; club rather abrupt. The male has a broad transverse oblique brown fascia across the centre of the anterior wings. Var.  $\beta$ . With the wings nearly transparent, the scales being sparingly distributed over the surface, but all the usual markings visible. Caterpillar slender, light green, with dark stripes on the back and sides. Chrysalis dusky.

Abundant everywhere in woods, lanes, and way-sides, in April, July, and August.

B. Eyes naked: wings, especially the posterior, more or less dentated: palpi moderately hairy:—frequent heaths, commons, and meadows.

a. *Antennæ with a short, abrupt club.*

Sp. 4. Semele. *Alis fulvo nigroque nebulosis, anticis ocellis utrinque duobus, posticis suprà unico.* (Exp. alar. 2 unc. 3—7 lin.)

Pa. Semele. *Linné.—Lewin, pl. 17.—Hi. Semele. Steph. Catal.*

Anterior wings above dull brown, with a posterior fulvescent, interrupted, irregular band, in which are two ocelli, having a small white pupil and broad black iris: the posterior wings are anteriorly brown above, with a broad transverse paler clouded band, in which is a small ocellus, with a minute white pupil and black iris, and surrounded with dull fulvous; posterior margin dusky: beneath, the anterior wings have the basal half tawny, the apical flavescens, with two ocelli; the posterior margin clouded with brown and

b. *Antennæ moderate; club slender, fusiform.*

‡ Sp. 5. Phædra. *Alis fuscis concoloribus, primoribus ocellis duobus.*—*Linné.* (Exp. alar. 2 unc. 6 lin.)

Pa. Phædra. *Linné.—Turton.—Hi. Phædra. Steph. Catal.*

Wings above deep uniform brown: the anterior with two large ocelli on each surface, parallel with the hinder margin, composed of a large bluish-white pupil and black iris; posterior with a minute ocellus near the anal angle on the upper surface, and a corresponding spot on the lower: the wings beneath are rather paler, the anterior with a pale circle round the ocelli, and the posterior with a whitish irregular band across the centre, and an obsolete striga of dusky clouds between it and the hinder margin. Caterpillar ash-coloured, with two rows of elongate black spots on the back.

Indicated as British by Turton, but I believe without sufficient authority.

† Sp. 6. Alcyone. *Alis fuscis fasciâ albidâ, anticis utrinque ocellis duobus, posticis infrâ unico.*

Pa. Alcyone. *Esper.—Stewart.—Hi. Alcyone. Steph. Catal.*

Wings brown, with a whitish band, the anterior with two ocelli on both sides; the posterior underneath marbled with brown and black, and having a white angular band, and a single ocellus.

Stewart, in the second edition of his Elements of Natural History, gives this insect as an inhabitant of Scotland, having erroneously referred a female of Hi. Blandina to Pa. Alcyone of Esper.

white; the costa is marked with small black and white streaks: posterior wings beneath clouded with white, brown, and black, the base darkest: towards the anal angle is a minute ocellus, with a white pupil and black iris: the cilia are brownish, interrupted with dusky: the body is brown above, grayish beneath: the antennæ brown above, with the under part ochraceous. The female is generally paler than the male, and has larger ocelli.

The intensity of its colouring varies greatly: in some specimens the upper surface is nearly black; in others the marginal band is flavescent, with a few brownish clouds: beneath, the anterior wings are frequently very deep brown at the base, with a dusky bar across the centre, and the hinder margin of the same colour: and the posterior wings are occasionally marked with a zigzag, irregular central ochraceous band. The ocelli, in all the wings, both above and below, also vary much in size. Caterpillar green: chrysalis dusky.

A common, but rather local species, frequenting heaths and woody places in July. The Rev. L. Jenyns informs me that it is extremely abundant on Newmarket and Gamlingay heaths, Cambridgeshire; and Mr. Wailes, that it frequents the sea-coast, where the magnesian-limestone occurs, at Marsden, near South Shields, while on the rocky shore of the opposite banks of the Tyne (where there is no limestone), it is not found. Mr. Ingpen took it in plenty on Salisbury Plain, and Mr. Backhouse finds it on the sea-coast, near Scarborough.

c. *Antennæ elongate; club slender, fusiform; palpi, when denuded, with attenuated joints.*

Sp. 7. Galathea. *Alis flavicantibus nigro maculatis; subtis anticis ocello unico, posticis quinque sesquialtero.* (Exp. alar. 2 unc.—2 unc. 3 lin.)

Pa. Galathea. *Linnc.—Lewin, pl. 28.—Hi. Galathea. Steph. Catal.*

Wings yellowish spotted with black; anterior with a series of yellowish dots parallel with the hinder margin above, and the under surface nearly similar, but paler, with a small ocellus near the tip: the posterior wings above have also a series of marginal dots or lunules, with an irregular broad patch of yellowish through the centre, and a large spot of the same colour at the base: towards the hinder margin are some obsolete ocelli; beneath, the base and an irregular angular band are dusky, thickly irrorated with yellowish, and edged with black: on the anterior margin are two ocelli, and towards the interior edge are three others, the inner of which is double: the body is black, yellowish beneath: the antennæ black, annulated with white, the tip reddish beneath. The female has the lower surface of the posterior wings of a deeper yellow than the male.

Var. *β.* The maculations of the wings resembling the above in form, but the ground colour of a yellowish buff, with pale yellowish brown markings in lieu of black.

Caterpillar bright green, with obscure dorsal and lateral lines: head brownish.

It feeds on the cat's-tail grass. Chrysalis yellowish.

Few insects are more decidedly local than this; yet it is found in several places throughout the country: var.  $\beta$  I received from Devonshire, where it was captured by Captain Blomer, who presented me with the specimen, accompanied with the information that the insect was not uncommon in the neighbourhood of Teignmouth. Mr. Dale takes it near Glanvilles' Wootton, Dorsetshire; Mr. Hanson in Shirley-wood, near Billingbear, Berks; the Rev. L. Jenyns at Fen Stanton and Rampton, Cambridgeshire, but says that it is rare in the county. Mr. Wailes acquaints me that it occurred in plenty during the past season near York, but that it has not hitherto been seen near Northumberland; and the Rev. G. T. Rudd, that it "occurs (sparingly) on the north-eastern rampart of the 'Hill' at Amesbury, and is so local there as seldom to pass round the corner, or to be found in any other part of the Hill;" and that he found three or four specimens in Collingbourne-wood, Wilts. I have caught it very abundantly in a heathy copse adjoining the north end of Darenth-wood, and also near Dover; but I am not aware of a nearer habitat to London than the former, although Petiver informs us, in a scarce little tract\*, "that he had observed it in a wood near Hampstead, in June and July;" and Mr. Witherington tells me that he has formerly taken it in plenty in the lane leading from Peekham Rye to Oak of Honour-wood. In Ray's time it was abundant near Braintree, in Essex.

d. *Antennæ short; club elongate, fusiform.*

1. Anterior wings somewhat triangular; posterior strongly dentated.

Sp. 8. Tithonus. *Alis disco luteo-fulvis, anticis ocello bipupillato, posticis punctis duobus albis.* (Exp. alar. 1 unc. 5—10 lin.)

Pa. Tithonus. *Linné.—Lewin, pl. 14, f. 3, 4.—Hi. Tithonus. Steph. Catal.*

Above, the anterior wings are tawny-yellowish, with the base, anterior and posterior margins, brown, with a bipupillated ocellus towards the apex on both sides; beneath similar, but paler, especially on the hinder margin: posterior wings brown, with a tawny-orange disc, and an obsolete ocellus towards the anal angle; beneath, the basal half tawny-brown, followed by an irregular cinerascens central band, and terminated by tawny-brown clouds, in which are from three to five minute white points: cilia brown, interrupted by dusky: abdomen brown above, paler beneath: antennæ tawny-brown. The male differs in being more brilliant in colour, and in having an oblique dusky patch on the disc of the anterior wings above.

Var.  $\beta$ . Both sexes with a single black spot on the hinder margin of both surfaces of the anterior wings, between the ocellus and the anal angle.

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\* Musæi Petiveriani centuria prima, &c. London, 1695.



Var.  $\gamma$ . Both sexes with two additional spots placed as above, the hinder one generally pupillated.

Var.  $\xi$ . Both sexes with two ocelli on the posterior wings above, and the white spots beneath surrounded by a deep black ring

Caterpillar greenish, streaked with white: head brown: feeds on the annual meadow grass, and, according to some authors, on the hieracium piloselle. Chrysalis green.

Found copiously in meadows and grassy lanes during the month of July, throughout the metropolitan district. It was remarkably plentiful during the past season in some lanes near Ripley, abounding with brambles, on the blossoms of which it reposed, in company with *Hi. Janira* and *Hyperanthus*, and *Thecla Pruni*: it is probably found throughout the country, being common in Yorkshire and Northumberland.

Sp. 9. *Janira*. *Alis fuscis (femina maculâ fulvâ) anticis utrinque uniocellatis, posticis subtis griseis fuscis cinereis.* (Exp. alar. 1 unc. 6 lin.—2 unc.)

Pa. *Janira et Jurtina*. *Linnc.*—*Lewin*, pl. 18.—*Hi. Janira*. *Steph. Catal.*

Wings fuscous, or nearly black: the male with the anterior usually immaculate above, having near the tip on each surface a black ocellus surrounded by fulvous, with a white pupil, sometimes with a yellowish patch beneath the ocellus above; beneath fulvous, with the hinder margin grayish-brown: posterior wings beneath tawny-brown at the base, terminating in an obsolete angular line; beyond this ashy-brown, with from one to three minute dusky spots. Female generally with a large irregular tawny-orange blotch on the anterior wings above, in which is an ocellus, as in the male; between the blotch and the base the disc is obscurely tawny; beneath tawny-orange, with a paler band towards the hinder margin, the latter brownish; the posterior wings above have mostly a tawny patch on the disc, beneath tawny-brown at the base, terminating in a very distinct angular line, beyond which is a pale cinereous band, in which are one or more black eye-like spots; the hinder margin griseous, or brownish.

In some specimens of the male there is a deep black patch on the disc of the anterior wings, and the same wings in the female are occasionally nearly immaculate above; the ocellus is frequently blind, sometimes bipupillated, and often accompanied by a secondary ocellus above, and a black spot or two beneath: the band on the inferior surface of the posterior wings is frequently immaculate. In some specimens one or more large, irregular, and undefined pure white blotches occur, on various parts of the wings.

Var.  $\zeta$ . Wings very pale ochraceous tinged with coppery, with a dusky patch at the base; the markings as usual.

Caterpillar green, with a white lateral line, thickly clothed with hair: it feeds on meadow grass: the chrysalis is yellowish-green, with dusky streaks on the head and wing-cases.

This is probably the most common species of papilionaceous insect found in Britain. It abounds in every meadow and lane near the metropolis, during the month of July; and is abundant in the north of Britain.

2. Anterior wings somewhat rounded; posterior obsolete denticulated.

Sp. 10. *Hyperanthus*. *Alis fuscis, anticis subtis ocellis uno—tribus, posticis subtis æpissimè quinque, aut rarissimè omninò obliteratedis.* (Exp. alar. 1 unc. 6—11 lin.)

Pa. *Hyperanthus*. *Linné.—Lewin, pl. 20.—Hi. Hyperanthus. Steph. Catal.*

Anterior wings above plain brown, frequently with one or more black faintly ocellated spots, especially in the females: beneath generally with three ocelli towards the hinder margin, the inner one usually smallest: the posterior wings above also brown, with two or more obsolete ocelli, near the hinder margin: beneath with two approximating ocelli behind the middle of the anterior margin, and three parallel with the hinder margin, of which the one towards the anal angle is smallest: all the wings are paler beneath, and edged with a whitish fringe: the body is fuscous, paler beneath: the antennæ brown, annulated with whitish, with the tip of the club fulvous.

Var. *ℓ*. Anterior wings beneath with three very large ocelli, posterior with five; several on all the wings sesquialterous, or having smaller ocelli attached.

Var. *γ*. Wings ocellated as in var. *α*, but the ocelli large and conjoined.

Var. *℘*. Wings ocellated as in the last, but the ocelli very minute.

Var. *ε*. Ocelli in number as before; the smaller or hinder ocellus on the anterior wings bipupillate, the inner one on the posterior wings nearly obsolete.

Var. *ζ*. Ocelli entirely obliterated; in lieu thereof three snow-white spots on the anterior wings beneath, and five on the posterior.

Var. *η*. Anterior wings with three ocelli beneath; posterior with four, the one at the anal angle being obliterated.

Var. *θ*. Anterior wings beneath with three ocelli; posterior with four white spots.

Var. *ι*. Anterior wings with three ocelli beneath; posterior as in var. *α*.

Var. *κ*. Anterior wings as in the last; posterior with four ocelli, the inner one being obliterated.

Var. *λ*. Ocelli in number as in the last; the anterior costal one on the posterior wings wanting.

Var. *μ*. Anterior wings with two ocelli beneath; posterior with three; the costal and anal ones wanting.

Var. *ν*. Ocelli obliterated: anterior wings beneath with two white dots; posterior with four.

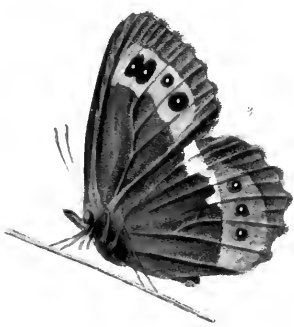
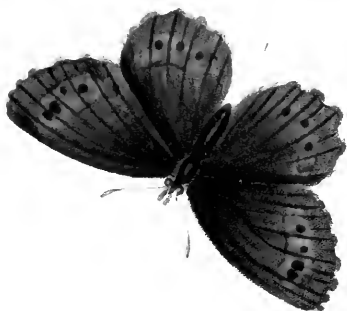
Var. *ξ*. Anterior wings with a single ocellus beneath; posterior with five.

Var. *ο*. Anterior wings as in var. *ξ*; posterior with four ocelli, the anal one obliterated.

Var. *π*. Anterior wings as in the two last varieties; posterior with three ocelli as in var. *μ*.

Var. *ρ*. Ocelli obliterated; anterior with a single minute white dot beneath; posterior with four.





Var. ♂. Ocelli obliterated; anterior wings immaculate; posterior with three minute white spots.

Exclusively of the above, there are numerous intermediate varieties in the magnitude of the respective ocelli; and the wings are frequently differently ocellated on the left and right sides. There are, no doubt, several other varieties extant, but the above are all that I possess, and have had an opportunity of examining.

Caterpillar whitish-grey or dusky, with a black line behind; it subsists chiefly on the annual meadow grass, at the roots of which it resides: the chrysalis is bright brown, with obscure streaks and shades.

An abundant species in damp grassy woods and lanes throughout Britain; some of the varieties are, however, rare.

C. Eyes naked: anterior wings entire, rounded: posterior dentated: palpi hairy: terminal joint short, obtuse. Frequent mountainous districts, or swampy heaths.

Sp. 11. Ligea.—PLATE 6. f. 1. ♂ f. 2, 3. ♀.—*Alis fuscis, fasciâ rufâ, anticis utrinque ocellis quatuor, posticis tribus, his subtis fasciâ abbreviatâ albâ.* (Exp. alar. 1 unc. 10 lin.—2 unc.)

Pa. Ligea. *Linné.*—*Sowerby*, i. pl. 2.—*Hi. Ligea. Steph. Catal.*

Wings above brown, with a rufous fascia towards the hinder margin, in which on the anterior are four black ocelli with white pupils, the latter obsolete in the male, and the two apical ocelli united; the band on the posterior wings above bears also three black ocelli, differing as above in the sexes: beneath, all the wings are paler, and the anterior resemble their upper surface, but the red fascia is more distinct; the posterior are adorned with an abbreviated, irregular, sinuated white fascia, placed nearly parallel with the hinder margin, and reaching almost to the anal angle of the wing; between this and the hinder margin are three black ocelli, with white pupils, and cinctured with red: the cilia of all the wings, above and below, are white interrupted with brown: the body is deep brown above, paler beneath: the antennæ dusky above, white beneath.

Caterpillar green, with a black dorsal stripe, and several whitish longitudinal ones: the head reddish yellow.

Few cabinets contain this insect, which is more to be esteemed from its apparent rarity than for its beauty. The only indigenous specimens which have come to my knowledge were captured in the Isle of Arran, I believe by Sir Patrick Walker and A. Mac Leay, Esq.; but I am not aware of the true locality, or of the period of the year, which is probably about July or August. It is readily distinguished from the following (fine females of which have sometimes been mistaken for it) by the white fascia on the inferior surface of the posterior wings, and by the fringe, or cilia, being

white interrupted by brown. There are several other manifest characters which may easily be recognised by comparing the description of *Hi. Blandina* with the accompanying plate, which has been executed from a fine pair of the insect in my collection.

Linnaeus has erroneously referred to *Albins'* plate 5. f. 1. for a figure of this insect, an error which *Fabricius*, in his attempts to amend, has materially increased by striking it out from the Linnean species, and inserting it as a synonym to his *Pa. Medusa*; whereas the figure in question correctly represents *Thecla Betulæ*.

Sp. 12. *Blandina*. *Alis fuscis, fasciâ posticâ rufâ, punctis ocellaribus nigris, posticis subtis fasciâ cinereâ.* (Exp. alar. 1 unc. 10 lin.—2 unc.)

*Pa. Blandina. Fabricius.—Don, xii. pl. 426.—Hi. Blandina. Steph. Catal.*

Wings above brown, with a rufous band towards the hinder margin, in which on the anterior are four black ocelli with white pupils, the two anterior united as in *Hi. Ligea*: the band on the posterior wings is somewhat obsolete, interrupted at each nervure, abbreviated, and bearing usually three black ocelli with white pupils, and a black dot: beneath, the anterior wings are rather paler, but banded and ocellated as above; the posterior wings have rather more than the basal half deep fuscous, obsoletely terminating in a sinuated line, and followed by a bluish-ash fascia, posteriorly tinted with red, in which are one or more minute ocelli: cilia brownish, interrupted with dusky. The female differs in having the ocelli more distinct both above and below, the under surface of the wings much paler, especially the posterior, which are pale cinereous at the base and hinder margin, with a broad intermediate brown band; the cilia are also more distinctly interrupted, being whitish, with brown spots. The body and antennæ as in *Hi. Ligea*.

Var.  $\beta$ . Both sexes with the third ocellus from the apex of the anterior wings blind; posterior wings as above.

Var.  $\gamma$ . Both sexes with the third ocellus obliterated.

Var.  $\delta$ . Female with five ocelli on the band of the anterior wings.

Var.  $\epsilon$ . As in var.  $\beta$ , but the posterior wings with two ocelli only above.

Var.  $\zeta$ . As in var.  $\gamma$ , but two ocelli only on the posterior wings.

Var.  $\eta$ . Ocelli as in var.  $\gamma$ , but very small; the posterior wings beneath with four very distinct bands; the first, at the base, pale dusky, the second broad, bent, deep reddish-brown; the next attenuated at each end, bluish-ash, sprinkled with white, with three minute ocelli, and terminating at the anal angle of the wing; the hinder one occupying the posterior margin, and bright rufous brown.

Discovered many years since, at the beginning of August, in the Isle of Arran, by Dr. Walker, and, subsequently, taken there by Sir Patrick Walker and Dr. Leach, and in profusion by Messrs. Curtis and Dale, the latter of whom supplied me with a fine series of both sexes. It has recently been found not uncommonly near







Castle Eden Dean, in Durham; but the English specimens, which were sent to me by Mr. Backhouse, appear to differ considerably from the Scotch. I have described them under var.  $\eta$ ; the other varieties are all from the original habitat. It is probable that there are several other distinct varieties in ocellation than those mentioned above; but the impossibility of my seeing the collection in which they may be contained obliges me to be silent.

D. Eyes naked: wings elongate, pilose, entire: palpi very hairy. Frequent mountainous districts.

Sp. 13. Cassiope.—PLATE 8. f. 1, 3. ♂ f. 2. ♀.—*Alis sericeo-fuscis, fuscâ rufâ, sæpè punctis subocclaribus nigris ornata, posticis subtilis punctis solis.* (Exp. alar. 1 unc. 3—5 lin.)

Pa. Cassiope. *Fabricius*.—Hi. Cassiope. *Steph. Catal.*

Wings of a silken-brown, the anterior with a red fascia behind, in which are usually four obsoletely subocclated black spots, the third the least; the posterior have also a red band, abbreviated at each end, and bearing three subocclated black spots: beneath, the anterior wings are pale metallic brown, with an irregular red band near the hinder margin, attenuated in the middle, and bearing four black spots; the posterior wings are pale coppery-brown, with three black spots, obsoletely cinctured with fulvous, placed opposite to the ocelli of the upper surface: the cilia are brown above, whitish beneath: the body and antennæ are dusky, the latter nearly white on the under side.—*Fig. 2.*

Var.  $\beta$ . The fascia on the anterior wings, above and below, with three ocelliform spots, the third being obliterated: posterior wings as before.—*Fig. 3.*

Var.  $\gamma$ . The fascia on the anterior wings on both surfaces with two ocelliform spots, the third and fourth being obliterated; posterior wings as before.

† Sp. 14. Mnestra. *Alis nigro-fuscis, anticis suprâ fuscâ latâ rufâ, punctis ant ocellis duobus nigris, posticis fuscâ angustâ abbreviatâ rufâ, in feminis tri-occlatis.*

Pa. Mnestra. *Hubner*.—Hi. Mnestra. *Steph. Catal.*

Wings black-brown, anterior above with a broad red band, with two black dots; beneath, with the disc red immaculate: posterior wings above with an abbreviated red band, beneath without spots, with an obliterated band before the posterior margin. Female with two ocelli in the band of the anterior wings on both sides; and three minute ones on that of the posterior.

Allied to var.  $\gamma$ . of the preceding insect, and admitted into our Fauna by mistake upon the examination of the Museum specimen of Hi. Cassiope, which was so dissimilar to the other specimens of that insect formerly contained in collections, and appeared to agree with Pa. Mnestra of Hubner, that it was considered as distinct, and referred to the last named insect.

- Var.  $\delta$ . The fascia on the anterior wings with the apical ocellar spot only; posterior wings as before.
- Var.  $\epsilon$ . The fascia on the anterior wings unspotted; the posterior wings with three circular red spots, the one at the anal angle with a black dot.—*Fig. 1.*
- Var.  $\zeta$ . Anterior wings with four round red spots, with a black dot in each; the posterior with three, in lieu of the fascia.
- Var.  $\eta$ . Anterior wings with four minute red spots; posterior with two.
- Var.  $\theta$ . Anterior wings with three very obsolete minute red spots, slightly pupillated; posterior with two.
- Var.  $\iota$ . With the fascia on the anterior wings, spreading towards the base, and forming an irregular patch occupying the greater portion of the disc of the wing; posterior wings as in var.  $\zeta$ .

Var.  $\eta$  is the *Papilio Mnemon* of the Entomological Transactions, p. 332, in which it was described by Mr. Haworth, about fifteen years since, from specimens in the collection of the late Mr. Francillon, to whom they were presented by T. Stothard, Esq. R. A., their captor, and reputed discoverer of the insect in Britain; but, however, a single specimen was previously obtained by Dr. Leach from the cabinet of the late Dr. Lettson, which was said by the latter to have been taken in Cumberland. From the circumstance of so many years having “rolled on” without other specimens of the insect occurring, its native origin began to be questioned; but the past season has undeniably set the question at rest, through the instrumentality and industry of Mr. Dale, who was furnished with its locality from Mr. Stothard, and, accompanied by Mr. Curtis, procured many specimens of the male from the grassy sides of the mountains in the vicinity of Ambleside. The discovery of the female is, however, due to an indefatigable collector—and one who disposes of the insects he collects—Mr. Weaver, of Birmingham\*, who found several of each sex, and the chief of the varieties described above from the same and different localities in the counties of Westmoreland and Cumberland, during the month of July.

E. Eyes naked: wings entire: palpi slender, moderately hairy, the terminal joint very long, acute: frequent boggy heaths and marshy places in mountain districts.

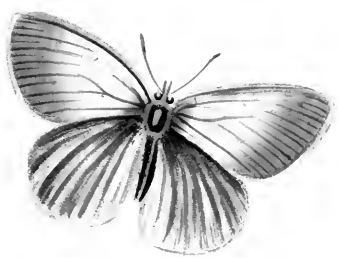
Sp. 15. *Iphis*. PLATE VII. f. 1, 2.—*Alis supra griseo-fulvis sæpè immaculatis, anticis subtùs ocello uno alterore, posticis 2-5 obsolete, rarissimè oblitteratis.*  
(Exp. alar. 1 unc. 6—8 lin.)

Hi. *Iphis*. *Ochsenheimer*.—*Stroph. Catal.*

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\* No. 28, Weaman-street.





Above, usually deep immaculate rusty-tawny, the anterior wings slightly tinged with brownish on the hinder margin, and clouded at the base with dusky; the posterior wings are of a deeper hue, especially towards the base, which is clouded with dusky; all the wings have a whitish edge: beneath, the anterior wings are dusky at the base, the disc is dull ferruginous-tawny, with an abbreviated irregular white stripe towards, and parallel with, the hinder margin, which is usually bordered on the inner edge with dusky, or black; between this stripe and the margin are generally two black ocelli, with white pupils, surrounded by a whitish circle; the tip of the wings and a narrow slip along the hinder margin is greenish ash-colour: the posterior wings have more than the basal half deep greenish-brown, followed by an interrupted, irregular, sinuated white band, on the anterior margin of which is a single ocellus, coloured as before; this band is followed posteriorly in the female with a fulvous cloud, but in the male with a patch uniform with the base of the wing, in which are usually five whitish circles, in the third and fourth of which is a black ocellus with a white pupil, in the second a black dot, and in the fifth or anal one a rather obsolete ocellus, which is frequently double: the edge of the wing is ash-coloured: the cilia of all the wings above are whitish-brown, beneath whitish-ash: the body above dusky, tinged with greenish-ash; beneath, of the latter colour: the antennæ are dusky, annulated with white, the tip of the club tawny.

- Var.  $\beta$ . With the white band on the under surface of the posterior wings scarcely interrupted: the ocellation various.
- Var.  $\gamma$ . Anterior wings beneath with four ocelli, the posterior with five.
- Var.  $\delta$ . Anterior wings beneath with three ocelli, the posterior with four.
- Var.  $\epsilon$ . Anterior wings as above, the posterior with three ocelli.
- Var.  $\zeta$ . Anterior wings with two ocelli, the posterior as in var.  $\gamma$ .
- Var.  $\eta$ . Anterior wings as in the last, posterior as in var.  $\delta$ .
- Var.  $\theta$ . Anterior wings with two ocelli, posterior with one ocellus.
- Var.  $\iota$ . Anterior wings with one ocellus, posterior with one or more ocelli.
- Var.  $\kappa$ . All the wings inoCELLATED.

The varieties of this species are almost interminable; the above are all I consider worthy of a distinct notice: specimens sometimes occur with a greater number of ocelli in both wings: I have some with five on the anterior wings and seven on the posterior: the obliteration of the ocelli also varies much; in some individuals they are replaced by pale fulvescent or whitish spots, and in others they are totally obsolete. Again, many specimens have the upper surface bearing very distinct ocelli, which vary in number. The females have, in addition to the tawny cloud in the under surface of the posterior wings, the wings usually much paler than in the male, with a paler blotch on the upper surface of the anterior behind the middle of the disc anteriorly, and a similar patch on the posterior above; the ocelli are also generally more distinct than in the male.

The caterpillar is dark green, with a bluish head, and a slender dark dorsal stripe: the chrysalis is dark green.

The first notice of this insect as indigenous is given in *Lepi-  
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doptera Britannica, from two specimens captured by P. W. Watson, Esq. near Beverley, Yorkshire. Many years, however, passed away without other specimens occurring, and the London cabinets were destitute of this species until the learned author of the above work discovered it in profusion in a marshy situation near Cottingham, in the above county, and supplied his friends therewith. It has of late years been found in Scotland and Wales, and appears to be not uncommon in some parts of Cumberland; and I am assured by Mr. Wailes that it occurs in plenty on damp heaths, in Northumberland, in the beginning of July, varying from my figure 1, to figure 3: in fact, it appears to be not an uncommon northern species.

Sp. 16. Polydama.—PLATE 7, f. 3.—*Alis fulvis, anticis subtus ocellis duobus vel quatuor, posticis 6 albo cinctis, quarum 3 dimidiatis.* (Exp. alar. 1 unc. 6—8 lin.)

Pa. Polydama. *Haworth.*—Hi. Polydama. *Steph. Catal.*

Anterior wings griseous-tawny, with two blind ocelli towards the tip; posterior brown, with a broad whitish stripe on the inner edge, and a minute blind ocellus towards the anal angle: beneath, the anterior wings are tawny-brown, with the base brown, ash-coloured at the tips, with an abbreviated transverse whitish band posteriorly, between which and the hinder margin are two remote ocelli, with an obsolete white pupil and black iris, and cinctured with white: the posterior wings at the base are dusky, externally dentate, and terminated by an irregular whitish fascia, behind which they are cinereous, with six ocelli, of which three are very small and nearly obliterated, and all are surrounded by a white circle.

Var. *β*.<sup>\*</sup> With the white fascia on the posterior wings beneath scarcely continuous.

Mr. Haworth, with his wonted acumen, ventured to describe this insect as distinct from the former, upon the examination of three specimens only of the two supposed species; for such alone can I imagine them to be, notwithstanding I have separated them above—the chief distinction, according to Mr. Haworth, consisting in the uninterrupted white fascia on the under surface of the posterior wings, and which, if allowed to constitute the diagnostic of the

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\* This, the preceding, and the following insects vary similarly in the presence and obliteration of the ocelli. I shall, therefore, merely notice (under Hi. Polydama and Davus) such varieties as appear peculiar to the respective species, observing that the former insect has usually larger and more distinct ocelli than Hi. Iphis.

species, would equally separate var.  $\beta$  of *Hi. Davus* from the other varieties of that insect; but Mr. Haworth lays much stress upon the localities of the two presumed species, he having taken of *Hi. Iphis* nearly fourscore specimens, in a marsh near Cottingham (as previously noticed), without a single individual of *Hi. Polydama* amongst them; whereas the Rev. W. T. Bree informs me, that he took the latter in great abundance (and kindly supplied me with specimens) on the mountains between Pala and Festiniog, Merionethshire, though amongst them was a single specimen of *Hi. Iphis*. Again, Mr. Weaver took the latter insect in great plenty in Cumberland last season, but unaccompanied by *Hi. Polydama*, although he captured that insect somewhat plentifully in North Wales nearly one month earlier: yet from the communications of Mr. Wailes both kinds appear to occur in his neighbourhood, as noticed under *Hi. Iphis*.

The name of this (supposed) species has been changed in the Butterfly Collector's Vade Mecum without sufficient investigation: the *Polymeda* of Scopoli being the *Hyperanthus* of Linné, and not the insect described by Mr. Haworth by the accidental term of *Polydama*.

Sp. 17. *Davus*. *Alis fulvo-fuscis, anticis subtis ocellis duobus sesquialtero interjecto, posticis sex sesquialtero fulvo cinctis.* (Exp. alar. 1 unc. 4—9 lin.)

Pa. *Davus*. *Fabricius*.—*Hi. Davus*. *Steph. Catal.*—Pa. *Hero. Dou*, vi. pl. 186.

Anterior wings above brownish-tawny, with one or more obsolete ocelli towards the hinder margin: the posterior wings are similar, with whitish cilia, with from one to four blind ocelli with a tawny iris. Beneath, the anterior wings are somewhat paler than above, with a posterior abbreviated whitish band; between which and the hinder margin are usually two ocelli, having a black iris and white pupil, and one or more spots or obsolete ocelli, which are cinctured with tawny: the hinder margin is whitish, with whitish cilia: the posterior wings at the base are greenish-brown, terminating somewhat in a wave, and followed by an interrupted irregular whitish angular band; beyond which the posterior margin of the wings is brownish, and adorned usually with six ocelli, having a whitish iris, a large black pupil, and a central silvery dot; the margin itself is whitish, and the cilia brownish: the body is of the colour of the wings above; the antennæ annulated with tawny and whitish.

Var.  $\beta$ . The ocellations as above; but the fascia, on the posterior wings beneath, uninterrupted.

Var.  $\gamma$ . With the basal half of the posterior wings beneath brown, clouded with white, and terminated by a continuous white band, as in var.  $\beta$ .

Var.  $\delta$ . The anterior wings with five distinct ocelli beneath; the posterior with

six, very large, the anal one especially, which is usually double; and at the apex of the abdominal areolet is an additional ovate blind ocellus placed at the termination of the white band.

*Obs.* I have not seen a specimen of this insect with the ocelli totally obliterated, and it may be remarked that they are usually largest in this species.

“*Incidit in Scyllam qui vult vitare Charybdim,*” is more applicable to the entomologist, who endeavours to unravel the intricacies of specific differences, than to any other class of naturalists; as it frequently happens that a character which appears important in one species cannot be relied on in the neighbouring ones, and, consequently, in his endeavours to draw the line of demarcation between kindred species, he not unfrequently oversteps the just boundaries of nature, and, in avoiding the error of describing species as varieties, he sometimes gives varieties as species: such, I fear, has been the case in the present genus with respect to the three last-mentioned insects, because, should *Polydama* be truly distinct from *Iphis*, the same characters would separate var.  $\beta$  of this insect from the other varieties; and I cannot for a moment imagine that such can be the case, as all the above-described varieties were captured, several in profusion, in the same marshes, between Stockport and Ashton, near Manchester, and at the same period of the year (July). Mr. Backhouse informs me that it frequents Shorn-moor, Yorkshire; and Professor Hooker, I believe, once captured a specimen in Norfolk.

‡ Sp. 18. Hero. *Alis fuscis, subtis primoribus ocellis duobus, posticis senis.*  
(Exp. alar. 1 unc. 6? lin.)

Pa. Hero. *Linne.*—Hi. Hero. *Steph. Catal.*

Anterior wings above fuscous, with a blind ferruginous ocellus towards the apex; beneath fuscous, with a whitish band towards the tip, beyond which is a silvery line, and the margin is luteous; between the margin and the whitish band are two ocelli, of which the exterior has a black iris and snowy pupil, the interior is blind, with a luteous iris and black dot. Posterior wings above also fuscous, with six blind ocelli, with a luteous iris and black pupil: beneath fuscous, with a posterior white band, followed by a silvery line, and a luteous margin; between the white fascia and the margin are six ocelli, having a luteous iris, the middle deep black, with a snowy pupil: antennæ black, annulated with white.

There was a specimen of this species, and also one of the following, in the collection of Mr. Plastead; the former said to have been taken near Wythyham, on the borders of Ashdown Forest,



Sussex; but being unable to examine the originals, I have merely given the Linnean definition.

‡ Sp. 19. Arcanius? *Alis ferrugineis, subtùs primoribus ocello unico, posticis quinis.* (Exp. alar. 1 unc. 6 lin.)

Pa. Arcanius. *Linne?*—Hi. Arcanius? *Steph. Catal.*

Anterior wings above ferruginous, with the hinder margin dusky, edged with whitish; beneath ferruginous, with a very minute ocellus towards the apex: posterior wings above fuscous, with a whitish edge; beneath griseous, with a silver line behind, a broad white band in the middle, a black ocellus on the outer margin anterior to the band, four ocelli behind the band, with a silvery pupil, the two anal ocelli largest.

Caterpillar green with a red mouth; dark green dorsal line, with a yellowish-white lateral line, and a yellow one over the legs.

The locality of this insect is unknown to me; the only reputed indigenous specimen was in Mr. Plastead's collection.

Sp. 20. Pamphilus. *Alis fulvis, anticis subtùs ocello unico, posticis fasciâ ullâ punctisque quatuor obsoletis.* (Exp. alar. 1 unc. 2—6 lin.)

Pa. Pamphilus. *Linne.*—*Lewin, pl. 23. f. 3, 4.*—Hi. Pamphilus. *Steph. Catal.*

Wings pale tawny above; the anterior with the margins dusky, with an ocellus towards the tip on each surface, which is sometimes blind, and frequently accompanied by a secondary one, or one or more black spots: the posterior wings have the margins also rather dusky, and an obsolete ocellus towards the anal angle: beneath, the anterior wings are cinereous at the base and tip, with the ocellus at the tip rather large, black, with a white pupil and whitish edge; the posterior wings are greenish-brown at the base, with an irregular abbreviated pale ash-coloured band in the middle, in which, towards the margin, are several minute indistinct ocelli; the margin itself is greenish-brown: the body is deep-fulvous or tawny-brown: the antennæ tawny, annulated with whitish.

The male is usually of a deeper hue, and the wings are more distinctly edged with dusky above.

Var.  $\beta$ . With the apical ocellus on the anterior wings totally obliterated.

Var.  $\gamma$ . With the posterior wings beneath of an uniform greenish-brown, the band and ocelli being obliterated.

The caterpillar is greenish, with white dorsal lines: it prefers the crested dog's-tail grass. The chrysalis is green.

An abundant species on every grassy heath and common throughout the kingdom; appearing in June, and again in September.

The extreme discrepancy of structure and diversity of habits among the insects referred to this genus induces me to add a few remarks upon the importance and utility of the study and investigation of *species*, as many naturalists assert, that the sole

object which should employ the attention of the student of nature is the form, or structure, with which she has endowed her multifarious productions, and that an intimate acquaintance with the species of which they are composed is not only useless, but ridiculous.

In opposition, however, to such assertions, I maintain, that an attentive examination of species, *nay even of varieties*, is of more *real utility* to mankind, than those researches which are carried on solely for the purpose of ascertaining the actual structure of animals, especially when conducted, as is frequently the case, without reference to their economy. What advantage, beyond the mere matter of fact, as scientific truths, can result from knowing that one kind of gnat is distinguished from another \* by the comparative length of the palpi (or feelers), the habits of the two being similar; that one genus of predaceous beetles has a notch or two more in its mandibles (or jaws) than another; or that the 1st, 2d, 3d, &c., articulation of the antennæ (or horns), in some of the last group, is either longest or shortest? The knowledge of such facts, though highly important, as exhibiting the method in which the series of affinities is preserved, indisputably conduces less to the interests of society than an acquaintance with the habits of species, or, as before observed, even of varieties; a point readily illustrated by inferences drawn from the higher animals, in which classes it will be no difficult task to find examples which show that the greatest benefit arises to mankind from an attention to the *varieties*. Look at our domestic animals, for instance; at the very important services peculiarly rendered by each variety; and how various are those furnished by the most faithful of all, the dog? Are not the several instincts of the different varieties of that animal the special objects of our care, and do we not employ them accordingly? Who would follow the pleasures of the chase, accompanied by the mastiff or turnspit? or consign the guardianship of his property to the greyhound or beagle? Again, the different qualities of horses, oxen, and sheep, might be advantageously pointed out, so far as their *real utility* is concerned †, if such a sordid consideration alone is to influence the

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\* E. g. *Culex* and *Anopheles*.

† What advantage has accrued to mankind by the incomparably accurate investigations of the learned author of *Monographia Apum Angliæ*? a work in which all the species, known at the period it was written, are arranged in con-

views of the lover of nature. To refer to objects more legitimately within the scope of the entomologist's observation, let him examine the organization of the four indigenous species of *true* Vanessa, and it will be found as exactly correspondent in all as in any kindred species throughout the creation, though their habits cannot be said to be similar; two of them, for example, Va. Io and Urticæ, ovipositing upon nettles, upon which their larvæ feed gregariously; whereas the other two, Va. Polychloros and Antiopa, oviposit respectively upon elms and willows, which afford pabulum to their progeny. V. Urticæ has two or more broods in the year, the other species one brood only, which arrives at perfection towards the end of summer; the last-named insect and Io appear with regularity, while the other two (Antiopa especially) occur with irregularity; the only points in which all agree being in their powerful flight, and the faculty they possess of hibernating.

The reverend author of the Introduction to Entomology says, "the knowledge of species is indeed indispensable for the registry of facts and other practical purposes\*;" and we learn from the highest authority that when the ALMIGHTY CREATOR rested from His labours, He pronounced *every thing* which He had created to be *very good*. Are we, therefore, to assume that only a certain portion of His works is *worthy of the attention* of mankind? Are not the various species of Monas individually of as much importance in the economy of nature, as the mighty Leviathan of the deep? And is the presumed limit of the animal creation, the purely microscopic Monas Termo (of which some recent speculative physiologists attempt to demonstrate the divine structure of man, as well as that of all other animated beings, is composed), to be despised on account of its apparent insignificance? I conceive that no unprejudiced person can deny the first, nor affirm the last, assumption; and consequently it follows, that *all* created beings are objects of our attention. But where is the mind that is capacious enough to comprehend the attributes of all the various species of the animal creation?—amounting probably to the prodigious number

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formity to their generic structure, accompanied with detailed figures and descriptions of the latter, whose accuracy will enable the veriest tyro to ascertain the generic identity of the honey-bee; but has it contributed to increase the cottager's store of honey?

\* Kirby and Spence. Introduction to Entomology, v. iv. p. 517.

of half a million!—400,000 of which are the peculiar objects of the entomologist's research, according to the calculations in the volume already referred to\*.—It is therefore obviously necessary for the student to limit his desires, though at the same time his investigations ought not to be ridiculed because he thinks proper to proceed to a greater extent than others, who choose to confine their observations to any particular branch of study, whether that of organization alone, or of the affinities of particular groups.

But the advocates for generic investigation assert, that the discovery of a new species is of no importance, that it leads to no useful result, and, finally, that a close examination of species is ridiculous and useless; thus sacrificing every principle of true science by assertions that are readily disproved by the dissimilarities of structure apparent in every extensive genus, which they without hesitation admit. As an example, the genus to which these remarks are appended may suffice; its contents being so manifestly dissimilar as to strike every person with surprise that all are at this time included under one generic name. Who, upon an examination of *H. Semele* alone, would surmise that *H. Cassiope*, or *Pamphilus* and its congeners, were placed in the same genus? And it is evident, that to acquire a knowledge of the real structure of the species in a genus, *all* must be obtained and examined, otherwise the structure of *some* must be presumed, and we must remain in comparative ignorance of *their* organization, by confining our investigations to the contemplation of genera alone. It is therefore clear that a rigid examination of species cannot be ridiculous, but is *absolutely necessary*, in order to obtain *correct* views of affinity; and the more rigidly we proceed, the greater beauties present themselves to our notice, and much additional light is thrown upon our knowledge of the harmonies of nature; and surely we cannot sufficiently admire those productions which “are the work of a BEING infinite in power, in wisdom, and in goodness,” whose beneficence is extended to every object of the creation, and who

“Has the great whole into perfection touched.”

I should have entered somewhat into the question of the distinction of species, were it not that I have treated at some length upon that subject in the Introduction to my Systematic Catalogue. I shall therefore merely add, that the approximation of kindred species

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\* K. and Sp. Int. v. iv. p. 477.

is sometimes so close, that the most experienced eye can scarcely detect the difference between them; that in some cases it is almost impossible to separate the individuals of such species, when variable, unless guided by experience of their habits and localities; and that it is sometimes impracticable by any form of words to convey an adequate idea of their relative distinctions to another person; in fact, as Mr. Bicheno has well observed, those species can only be detected by that tact which he has termed empirical;—yet, regardless of the continually repeated instances of such occurrences, there are not wanting individuals who assert that every newly discovered species is a mere variety of its nearest congener, unless they happen either to capture it, or to possess specimens; thereby sacrificing two important considerations: first, that it is he alone who is capable of giving the requisite examination to the specimens who has them in possession; and, secondly, their want of experience, when they have neither captured nor seen the insects at large. Why do not these entomologists, who thus dogmatically controvert the discoveries of others, inform their brethren, if the love of science be their ultimate aim, in what the essence of a species consists? and how they are able thus decisively to determine instantly upon the specific identity of every specimen? They will probably answer these first in the words of Mr. Kirby, who truly says, “A species is a natural object, whose differences from those nearly related to it had their origin when it came from the hands of its CREATOR; while those that characterise a variety have been produced since that event\*.” But by what means they are enabled *unerringly* (as they assume) to discover those characteristics, which distinguish the species from the variety, I am totally at a loss to conjecture: though as their opposition is frequently excited on account of the close approximation of the species, need they be reminded that the highest of all sciences, mathematics, requires the greatest degree of exactness, and yet a rigid attention to its utmost minutie is absolutely indispensable? It is therefore not surprising, that in the examination of zoological subjects a closer inspection than a mere *primâ facie* view should be necessary before we become thoroughly acquainted with them.

I have thought fit thus to combat the above points, and to extend these remarks, as, in consequence of venturing to add to the number

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\* Kirby and Sp. Int. v. iv. p. 396.

of species in the genus *Pontia*, it has been assumed that nearly half of the species described in these volumes are mere varieties, since I so absurdly *make*, as it is said, nine species out of five\* in the genus alluded to above; but the unprejudiced reader does not require his attention to be drawn to the observations subjoined to the characters of that genus in page 14, in which it is distinctly stated that I have diffidently ventured to call the attention of entomologists to a subject that appeared to have been greatly neglected, and to add one or two apparently distinct species to the number previously, or rather lately, described.

### FAMILY III.—LYCÆNIDÆ †, *Leach*.

*Antennæ* with a distinct club, which is sometimes compressed and furnished with a rudimentary hook at the tip: *anterior legs* slightly abbreviated, or imperfect; all the legs bearing minute simple *claws*: *hinder tibiæ* with one pair of spurs only at the apex: *posterior wings* with a groove to receive the abdomen. *Larva* oval, depressed; *pupa* short, contracted, obtuse at both extremities, smooth; fastened by a transverse thread.

The individuals of this family are known by their inferior size, and the delicacy of their form: the indigenous species are severally characterized by tints of dusky, copper, or blue, according to the

\* Every writer upon species has erred in this particular, from the time of Linné to the *present* period:—refer to Linné's genera *Coccinella* and *Cicada*, as examples—to the labours of our compatriots, Messrs. Donovan, Haworth, Kirby, and Marsham—or to those of Gyllenhal, Sturm, and De Jean. Have not they occasionally (from necessity) described varieties as species, and vice versâ? Have not recent genera been enriched with species whose validity is doubtful? I consequently am liable to similar misconceptions; but it shall be my endeavour to guard against them as far as possible during the prosecution of this work, bearing in mind the just remark of Seneca, that although “much remains for us to do, much will remain for those who come after us;”—as no individual can attain perfection.

† In adopting this term, I beg distinctly to be understood that it is not with any intention of eppugning the nomenclature of Mr. Swainson, who calls this family by the name *Polyommata*, in his remarks upon the *Papilionidæ*, but solely with a view of acting consistently, inasmuch as I have already employed it in page 5, in accordance with the nomenclature of Dr. Leach, who gave the term here used to the whole of Latrielle's second division of the *Diurna*: though, as the name of the family should unquestionably be derived from that of the typical group, I shall not attempt, from my limited knowledge of exotic forms, to decide which of the two ought to be retained.

respective genera to which they belong; and although many of them are distinguished by resplendent hues, the superior brilliancy of some of the exotic species surpasses that of almost any other object of the creation: their flight is feeble and slow.

Three genera alone inhabit Britain, which may be thus discriminated:—

<i>Antennæ</i>	{	capitula haud compresso: <i>Oculi</i>	{	pubescentes: .	16. THECLA.
				nudi: .	17. LYCÆNA.
		capitula compresso: .			18. POLYOMMATUS.

#### GENUS XVI.—THECLA, *Fabricius*.

*Palpi* rather longer than the head, three-jointed; the basal short, bent; the second elongate; the third short, scaly, rather acute: the two basal joints scaly, with a few hairs beneath: *antennæ* short, thickening gradually from the base to the apex, which is a little attenuated; the club elongate, cylindrical: *eyes* pubescent: *legs* alike in both sexes, *anterior* rather short; all furnished with very minute simple *claws*, nearly concealed by the foot-cushions, which are large: *wings*, *anterior* triangular, entire, *posterior* with short tails, or denticulated.

The genus *Thecla* may be distinguished by its sombre tints above, and the pale streaks with which the wings are adorned below; by the pubescence of the eyes, the abbreviated triangular anterior wings, and the ovate-triangular posterior ones, which are usually furnished near the anal angle with one or more short linear tails, or are strongly denticulated on that part. The larvæ feed upon trees and shrubs, and the perfect insects usually frequent hedges and flowers, fly but little at a time, and then generally among the foliage.

Sp. 1. *Betule*. *Alis suprâ fuscis, subtis luteis fasciâ fulvâ albo marginatâ, ciliis albis.* (Exp. alar. 1 unc. 4—7 lin.)

Pa. *Betule*. *Linne*.—*Lewin*, pl. 42. Th. *Betule*. *Steph. Catal.*

Wings above fuscous, or dark-brown: the anterior with a transverse black streak at the apex of the basal arcelet, beyond which, in the male, is a slight fulvous cloud, and in the female a large kidney-shaped orange spot, tending towards the hinder margin; the posterior are similar in both sexes, and have a tawny spot on the inner angle, and a streak of the same colour on the tail: beneath, the sexes resemble each other, but the colours are more vivid in the female; all the wings are orange-tawny, with a bright orange margin: the primary have a central transverse dusky spot, corresponding with the black one on the upper surface, edged with white; between which and the hinder margin on the costa is a deep orange acute-angled triangular spot, edged with dusky internally and white externally; the posterior wings have an obliqu-

slightly waved elongate orange band, margined with black internally and white externally: the anal angle is spotted with black, and the cilia on the anal areolets have a fuscous stripe: the body is brown above, cinereous beneath: the antennæ black, annulated with white.

Var.  $\beta$ . Male with the anterior wings above without a fulvous cloud.

Caterpillar green, with oblique yellowish streaks on the sides, and two yellow dorsal lines: it feeds on the birch and black-thorn: the chrysalis is reddish-brown, with paler streaks.

Inhabits birch-woods about the middle of August: Coombe and Darenth woods are its chief residences near London, though it is occasionally found near Hornsey: it occurs also in Raydon-wood, near Ipswich; in Berkshire, Dorsetshire, Devonshire, and near Andover; but it cannot be esteemed a common species any where, though about twelve years ago I took many specimens in Coombe-wood, both in the larva and imago states.

Sp. 2. *Quercus*. *Alis supra nigricantibus disco cæruleo, subtus cinereis strigâ undatâ albâ punctoque anî gemino fulvo.* (Exp. alar. 1 unc. 3—6 lin.)

Pa. *Quercus*. *Linné.*—*Lewin*, pl. 43.—*Th. Quercus*. *Steph. Catal.*

Wings above dusky black: the male with the disc of the anterior deep glossy blue, formed of an oblong patch, covering the basal areolet, and extending posteriorly towards the anal angle: the female with the entire disc purple, with a dusky posterior margin: the posterior wings with an obsolete fulvous dot: beneath, both sexes are similar; the anterior wings are cinereous, with an abbreviated white streak on the costa towards the apex; between which and the posterior margin the wing is paler, with a few fulvescent or whitish spots, clouded internally with dusky: the posterior wings are similar at the base, and have a strong undulated white streak, slightly edged internally with dusky; beyond this the margin of the wing is paler, and bears two rows of obsolete whitish crescents, with a fulvous spot at the anal angle, and an ocellus with a fulvous iris and black pupil; the tail is black: the body is black above, cinereous beneath: the antennæ black, obsoletely annulated with cinereous, with the club fulvescent beneath.

The purple blotch on the anterior wings of the male varies greatly in size; and the wings of the female are sometimes so slightly purpurascens as to appear brown.

Caterpillar flesh-coloured or brownish, with three rows of green dots; it feeds on the oak. Chrysalis rust-coloured, with three rows of brown dots.

A very common species throughout the south of Britain during the middle of July, frequenting the tops of lofty oaks and ash-trees: it is, however, somewhat rare in the north, as I am informed by Mr. Wailes that it occurred for the first time at Gibside, near Newcastle, in August last; but Mr. Backhouse acquaints me that it is common at Overton-wood, near York.



Sp. 3. Pruni. *Alis supra nigro-fuscis, subtus pallidioribus striga communi undatâ albâ, posticis fasciâ marginali rubro-fulvâ nigro marginatâ.* (Exp. alar. 1 unc. 2—7 lin.)

Pa. Pruni. *Linné.*—*Lewin, pl. 41.*—Th. Pruni. *Steph. Catal.*

Wings above deep black or brown, immaculate: beneath paler, especially in the females; anterior with a transverse abbreviated white streak on the costa towards the apex, slender and nearly straight in the male, broader and much waved, especially towards the inner edge, in the female: posterior wings with a similar streak, which becomes of a zigzag form, and attenuated towards the inner margin: beyond this is an irregular deep rufous-orange marginal band, edged internally with black, and, in very fine specimens, accompanied by a narrow white streak—spotted externally with the former colour, and also occasionally accompanied by a white streak towards the margin; the tailed appendages (which are longest in the females) are black, tipped with white: the body is black above, drab-colour beneath; the legs bluish, the tarsi annulated with dusky: the antennæ black, with white rings and an orange tip.

The male is further distinguished by an ovate glabrous spot at the apex of the basal areolet of the anterior wings.

Caterpillar dusky-green, with whitish lateral lines; the back dentated. It feeds on the black-thorn. Chrysalis dusky-brown, with a white head.

This species is usually esteemed a scarce insect in the neighbourhood of London, and previously to the last season I never saw it alive; but the boundless profusion with which the hedges, for miles, in the vicinity of Ripley, were enlivened by the myriads that hovered over every flower and bramble-blossom, last July, exceeded any thing of the kind I have ever witnessed: some notion of their numbers may be formed, when I mention that I captured, without moving from the spot, nearly 200 specimens in less than half an hour, as they successively approached the bramble-bush where I had taken up my position. How to account for their prodigious numbers I am perfectly unable, as the same fields and hedges had been carefully explored by me at the same and different periods of the year for several preceding seasons, without the occurrence of a single specimen in either of its stages; and it is worthy of remark, that the hedges to the north and north-west of the village were perfectly free, although the brambles, &c., were in plenty. A few specimens were also taken near Windsor, and in Cambridgeshire, and, I believe, near Ipswich, during the past season. The entomologists of this last town, Mr. Kirby informs me, do not esteem it a scarce insect: its usual time of appearance is the end of June, and it continues till the middle of July.

† Sp. 4. Spini. *Alis suprâ fuscis, subtùs cinereis; lunulis marginalibus fulvis muculâque anali cærulescente.*—Fabr. (Exp. alar. 1 unc. 4 lin.)

He. Spini. *Fabricius.*—Th. Spini. *Steph. Catal.*

Allied to the last: the wings above brown, with several reddish spots towards the apex posteriorly; the posterior, with the tip of the tail, white: beneath cinereous with a white stripe, a little angulated at the anal angle: towards the hinder margin several tawny crescents, dotted with black, and a large bluish spot at the anal angle, terminating in a black dot. Male with a discoidal spot, as in the last.

Caterpillar green, or reddish, with yellow dorsal lines, and a black head: it feeds on the black-thorn. Chrysalis above brown, beneath cinereous.

I have hitherto seen one specimen only of this insect, which is in Mr. Haworth's collection. I am not aware of its locality; but last July a second specimen was captured in Norfolk, by Mr. J. Sparshall, F. L. S., &c.

Sp. 5. Rubi. *Alis suprâ fuscis, subtùs viridibus, posticis sæpe strigâ punctorum alborum ornatis.* (Exp. alar. 1 unc.—1 unc. 4 lin.)

Pa. Rubi. *Linneé.*—*Lcwin. pl. 44.*—Th. Rubi. *Steph. Catal.*

Above dusky-brown, with the nervures blackish: beneath green, the anterior wings usually immaculate; with the thinner margin pale dusky-brown: the posterior wings not tailed, but denticulated on the hinder margin with an interrupted series of white dots, which is sometimes nearly obliterated: the cilia, both above and below, are brown, dotted with black on the posterior wings; the body is deep brown above and pale beneath.

The male is discriminated, as in Th. Pruni and Spini, by an opaque spot on the disc of the anterior wings near the costa.

Var. *β.* The anterior wings with a row of white dots beneath on the costa; the posterior with a strong continuous series, forming a streak.

Caterpillar green, variegated with yellow, with the head black: it feeds on the bramble, dyer's-weed, saint-foin, and broom. Chrysalis brown.

A pretty and not very abundant species, frequenting hedges and brambles, upon the buds of which last shrub the larvæ also feed, thus slightly receding from the habits of the genus, from which it is also somewhat removed by the form of its antennæ and of the posterior wings, and by the circumstance of its being double-brooded; the first brood appearing at the end of May or beginning of June, and the second at the beginning of August. It is found at Coombe and Darenth woods, near London; Bromley-thicket, Essex; in Dorsetshire, Devonshire, and near Andover, Hants.

GENUS XVII.—LYCÆNA, *Fabricius*.

*Palpi* longer than the head, somewhat divergent at the tips, three-jointed, the two first clothed with scales and hair, the terminal with scales only, and attenuated; the basal joint bent, the second very long, slightly curved at the base: *antennæ* with an abrupt obtuse club: *eyes* naked: *legs* alike in both sexes: *anterior* scarcely shorter than the rest: all furnished with small simple *claws* projecting beyond the foot-cushions, which are rather large: *wings* nearly entire; *posterior* denticulated at the anal angle.

The indigenous *Lycænæ* are known by the brilliant coppery tints which adorn the greater portion of the disc of the upper surface of the wings: they are at once discriminated from the *Theclæ* by their naked eyes, and by the want of the tail-like appendages to their posterior wings; and from the *Polyommata* by the form of the club of the antennæ, the more evidently denticulated posterior wings, and the superior size of the pulvilli or foot-cushions. They usually frequent marshy places, and their larvæ feed upon docks and herbs, but not on trees or shrubs. *Ly. Phlæas* differs a little from the other species in structure, in the sexes being similar, and in breeding several times in the year.

Sp. 1. *Phlæas. Alis anticis igneo-cupreis nigro-maculatis, posticis nigris fasci i marginali cupreâ, subtis cinerascensibus strigâ posticâ fulvâ.* (Exp. alar. 1 unc.—1 unc. 5 lin.)

Pa. *Phlæus. Linné.—Lewin. pl. 41.—Ly. Phlæas. Steph. Catal.*

Anterior wings above brilliant fiery copper-colour, with the posterior margin and eight discoidal spots black; the two basal ones placed longitudinally, the rest transversely, forming an irregular zigzag band near the hinder margin; the costa is rather dusky: the posterior wings above brownish-black, with a copper band on the hinder margin, which is more or less denticulated externally, and a black line and some dots on the disc: beneath, the anterior wings somewhat resemble the upper surface, but the colour is paler and not glossy, and there are ten distinct black spots on the disc, of which three are placed longitudinally, the rest transversely, as above; the hinder margin is drab-colour, with three or more black crescents internally; the posterior wings are drab-coloured, tinged with copper, sprinkled with numerous obsolete blackish dots, and marked on the hinder margin with an obscure tawny band: the cilia are black at the base, and rose-coloured at the tip: the body is black, with fulvescent hairs above, drab-coloured beneath; the antennæ are black annulated with white.—The female resembles the male.

Var. *β.* The anterior wings above of a deep dusky copper, with very large, nearly confluent, spots; the posterior wings with a very narrow waved band.

Var. *γ.* The anterior wings above pale rufous-copper, with the spots very small, and several of the inner ones obliterated.

Var.  $\beta$ . The posterior wings above more or less spotted with blue, towards the coppery band.

Var.  $\epsilon$ . The posterior wings above with faint radiating coppery lines, as in the female of *Ly. dispar*.

† Var.  $\zeta$ . With the posterior wings above totally of a dusky colour, without the cupreous marginal fascia.

† Var.  $\eta$ . With the disc of the wings pure white, the wings spotted and bordered as usual.

Caterpillar green, with a yellow dorsal stripe: it feeds on the sorrel.

A very abundant insect throughout Britain, frequenting commons, pastures, road-sides, and heathy and marshy places: there are three broods in the year; the first appears in April, the second in June, the third in August. Var.  $\zeta$ . was taken about seventeen years since on Wimbledon-common in April; and var.  $\eta$ . has been taken at Birch-wood, and near Ipswich; a specimen is in the Rev. W. Kirby's cabinet, and a second, I believe, in that of Mr. J. Hatchett, F. L. S.

Sp. 2. *Chryseis*. *Alis supra igneo-cupreis puncto nigro, marginibus fusco-purpurascensibus, subtus canescentibus punctis ocellaribus numerosis.* (Exp. alar. 1 unc. 5—6 lin.)

He. *Chryseis*. *Fabricius*.—Pa. *Chryseis*. *Sowerby*, *B. M.* i. pl. 13.—*Ly. Chryseis*. *Steph. Catal.*

Wings above bright copper, with the margin and base brown, glossed with brilliant purple: an elongate black dot in the centre of each: the posterior have also nearly half the disc purple: beneath, the anterior wings have the anterior margin cinereous, the disc orange, with about seventeen ocellated dots, with a black pupil and white iris, of which three are placed longitudinally towards the base, seven behind the middle, forming a waved band, and seven rather obsolete towards the hinder margin: the posterior wings are cinereous, with the base bluish, and upwards of thirty scattered ocellated dots, of which ten are irregularly diffused over the basal half of the wings, and the rest form three nearly parallel bands on the hinder margin, which has a strong fulvous band, in some specimens a little interrupted: the cilia on both surfaces are brown at the base, white at the tip: the body is black, with grayish hairs: the antennæ black, annulated with white.

† The female has the wings above brown, glossed with fulvous: the anterior with several obscure spots, the posterior with a fulvous band spotted with black; beneath similar to the male.

The colour of the under surface varies much: I have one specimen with the anterior wings beneath entirely cinereous tinged with fulvous, and having eight ocellated dots only.

An insect of great rarity, especially the female, arising, most probably, from its locality being unknown; notwithstanding it occurs

within twenty-one miles of the metropolis, I believe in the vicinity of Epping, whence Dr. Leach received fine and recent specimens for several successive seasons, and from whom I obtained those which are contained in my cabinet. The insect has also been taken in Ashdown Forest. It appears in August and September.

Sp. 3. dispar. *Alis suprà igneo-cupreis puncto margineque nigris, posticis subtòs pallidè caruleis punctis numerosis, margineque cupreo.* Haw. (Exp. alar. 1 unc. 6 lin. — 2 unc. 1 lin.)

Pa. dispar. *Haworth.*—Ly. dispar. *Curtis, i. pl. 12.—Steph. Catal.*

Male with the wings above of a splendid bright fiery copper colour, with an obscure row of spots towards the tip, the anterior with a central semilunar spot, and an adjacent small round one, placed longitudinally, the costal and posterior margins, and a patch at the base, black; the posterior with a slender oblong discoidal line, and the margins black; the colour of the margin more or less indented with that of the disc: beneath, the anterior wings are pale fulvous orange, with ten distinct ocelli, with a large black pupil and slender white iris; the three first are placed longitudinally towards the base of the anterior margin (as in Ly. *Phlæas*), the rest in a slightly arcuated transverse band, which is followed posteriorly by a series of black dots, of dissimilar sizes and shapes, and terminated by an ash-coloured margin and dusky cilia: the posterior wings are bluish, with an elongate discoidal streak, and numerous rather obsolete ocelli, with a black pupil and pale bluish iris; of these five are irregularly scattered towards the base, and nine are arranged in a waved band towards the margin; the hinder margin is deep orange, except at its union with the anterior, margined internally with a series of distinct black inocellated spots, and externally with a more or less evident series of dots; the margin itself is cinereous, the cilia dusky, with a blackish line at the base, as in the anterior wings.

The female is similar to the male beneath; but above, the anterior wings are divested of the gloss so conspicuous in the male, and have nine or ten black spots, of which two or three are placed longitudinally, near the base of the costal margin, the rest in an arcuated band towards the tip: the posterior margin is less intense in colour than the male, but the band is considerably broader; the base of the wings and the inner margin are dusky, sprinkled with coppery: the posterior wings are dusky-brown, with the nervures, and a denticulated hinder band copper-coloured: there is also a strong discoidal black spot, and frequently several, towards the hinder margin, placed transversely; and sometimes the entire wing is irrorated with coppery.

The ocellated spots vary considerably in size in both sexes.

The caterpillar is somewhat hairy, bright green, with innumerable white dots: it feeds upon a kind of dock. The chrysalis is at first green, then pale ash-coloured, with a dark dorsal line, and two abbreviated white ones on each side; and, lastly, sometimes deep brown.

This splendid insect appears to be confined to the fenny counties of Cambridge and Huntingdon, with the neighbouring ones of Suffolk and Norfolk, unless the account of its capture in Wales by Hudson be admitted; but this may probably be the following species, which may, moreover, eventually prove synonymous with *Ly. dispar*. In the two first localities it appears to occur in great profusion, as several hundred specimens have been captured within these last ten years by the London collectors, who have visited Whittlesea and Yaxley Meres during the month of July, for the sole purpose of obtaining specimens of this insect, which is also stated to occur on the coast of Suffolk, at Benaere; but that locality may, however, belong to the next insect.

Sp. 4. Hippothoë. *Alis suprâ fulvis subtùs cinerascensibus, punctis ocellaribus numerosis.* (Exp. alar. 1 unc. 5—6 lin.)

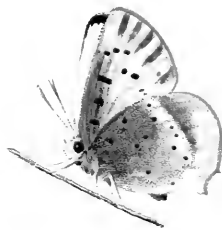
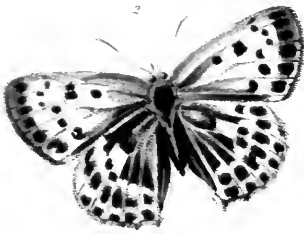
Pa. Hippothoë. *Linneé?*—*Ly. Hippothoë.* *Steph. Catal.*

Size of *Ly. Virgaureæ*: wings above entirely immaculate fulvous; beneath, luteous ash-colour: the anterior beneath with black spots, with a white iris, of which the three largest are placed near the outer (or costal) margin, seven lesser nearly transversely, and six very minute towards the hinder margin: the posterior are ash-coloured beneath, with about seventeen ocellated spots, and a fulvous band on the hinder margin, anteriorly spotted with black. The female differs from that of *Ly. dispar*, in having the spots on the upper surface of the anterior wings smaller, and in having the entire disc of the posterior wings above dusky, clouded with deeper spots, and without the fulvous nervures; the under surface resembles that of the male, and, like it, has fewer and smaller spots than *Ly. dispar*.

The inferior size of the above insect (which corresponds with the magnitude stated by Linnaeus) as well as the differences in the number and size of the ocellated spots on the lower surface of the wings, and the colour of the upper surface of the inferior ones of the female, combined with the circumstance, that, amongst several hundreds of *Ly. dispar* which have been taken at Whittlesea Mere, not one specimen occurred agreeing with the above definition, seem to point out the present insect as a different species.

The male which I possess was in the late Mr. Beckwith's collection, and the female is in that of Mr. Haworth, who informs me that he obtained it many years since from an old cabinet that was formed by a gentleman residing in Kent, and which contained scarcely any insect that was not the production of that county, thence called "the Kentish Cabinet," which renders it probable,







as Mr. Haworth surmises, that the true locality of this insect is in Kent.

Sp. 5. *Virgaureæ*. PLATE IX, f. 1, 2, ♂.—f. 3, ♀. *Alis supra fulvis margine atro, subtis punctis nigris, posticis aliquot albis.* (Exp. alar. 1 unc. 5—6 lin.)

Pa. *Virgaureæ*. *Linne.*—*Ly. Virgaureæ*. *Steph. Catal.*

Size of *Ly. Hippothoë*: male with the wings above of a beautifully resplendent fiery copper; the anterior immaculate, with a black border; the posterior with a row of six black spots attached to the hinder margin, which is also black: beneath, the anterior wings are pale tawny, with ten or eleven inoCELLATED black spots, of which the three largest are placed longitudinally, parallel with the costa, as in the other species, and seven or eight in an undulated transverse band, the spots on the inner edge being more or less obliterated, and sometimes geminated; the hinder margin is clouded with dusky: the posterior wings are tawny, with the base somewhat dusky, and have about twelve black spots, of which five are irregularly scattered towards the base, and the rest form an irregular band across the wing, and are each surmounted by a spot of white posteriorly; near the anal angle are a few orange spots, and the angle itself is rather acute, and has a deep notch adjoining. The female differs considerably, and is more obscure in colour: the anterior wings are spotted above, somewhat like those of *Ly. dispar*; but they have, in addition, a marginal series of six sub-confluent dusky spots, and are slightly clouded with fuscous: the posterior wings are brown, with the nervures, a large sub-quadrate discoidal spot, and two transverse bands of an obscure fulvous, giving a reticulated appearance to the wing, the brown interstitial spots being nearly quadrate: in other respects the sexes are similar: the body is dusky above, with greenish hairs: the antennæ are black, annulated with fulvous.

The marginal band on the upper surface of the wings of the male varies considerably in width.

The caterpillar is dull green, with a yellow dorsal and yellowish-green lateral stripe, black head and legs. It feeds on the golden-rod (*Solidago virgaurea*), and sharp-dock (*Rumex acuta*). The chrysalis is brownish-yellow, with dusky-red wing-cases.

The proper locality of this splendid insect does not appear to be well known, and I believe no specimens have occurred within these twenty years: it is said to inhabit the marshes in the Isle of Ely and Huntingdonshire, and to be found on the flowers of the golden-rod at the end of August.

#### GENUS XVIII.—POLYOMMATUS, *Latreille*.

*Palpi* longer than the head, nearly parallel, three-jointed, the two basal joints clothed with scales and hair, the terminal one with scales only, and acute; the basal joint short, arcuate, the second very long, the terminal as long as the first: *antennæ* rather short, with an abrupt compressed club, terminating

in a lateral point: *eyes* pubescent or naked: *legs* alike in both sexes: *tarsi* furnished with very minute, simple *claws*, projecting beyond the foot-cushions, which are very short, or obsolete: *wings* entire; the posterior scarcely, or not at all, denticulated at the anal angle.

There is considerable diversity of habit and form\* amongst the species of this beautiful genus. Nevertheless most of the species may be known from the *Lycænæ* by the rich blue tints with which their wings are adorned, and all by the compressed knob of the antennæ, the obsoletely denticulated posterior wings, and the minute pulvilli. Many of the species frequent chalky districts; others, however, affect fields, pastures, and commons, where the grass is high. The larvæ, as far as known, subsist upon herbs and grasses.

Were the species more numerous, it would be advantageous to divide the genus into sections, but from their paucity in Britain I shall merely observe, that *Po. Argiolus* differs from its indigenous congeners by the form and texture of its wings; that *Po. Alsus*, *Agestis*, and *Artaxerxes* are characterized by an uniformity of colouring in both sexes, while the remaining species are distinguished (in general) by the males being blue above and the females brown, excepting *Po. Arion* and *Alcon*, in which the latter sex is known by a predominance of brown above, and by having the disc considerably spotted with dusky or black; and that the five first species are destitute of a marginal fascia beneath, which is, however, rudi-

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\* With reference to the observations on this subject at the end of the genus *Hipparchia*, it is necessary to apprise the reader that they originated from those contained in the *Philosophical Magazine*, (vol. lxxiii. p. 58 and 219, and vol. lxxvii. p. 60); in Mr. Mac Leay's invaluable *Horæ Entomologicæ*, (p. 85, &c.); in the fourth vol. of the interesting *Introduction to Entomology*, (p. 547, &c.); and in the latter pages of Mr. Bichenov's *Address to the Zoological Club of the Linnean Society*; in each of which the investigation of groups, or forms, is more or less insisted on, almost to the total exclusion of that of species; and in some remarks upon Professor Kidd's anatomy of the mole-cricket (*Gryllotalpa vulgaris*) in the *Panoramic Miscellany* for February, 1826, such and similar investigations are considered ridiculous, puerile, and contemptible! I, therefore, as a student of species, warmly advocated the cause, which I have perhaps too ardently espoused; and in order to prevent my remarks being misconstrued I here introduce the chief passages which induced me to pen them, which it is perhaps needless to observe were adduced in favour of the investigation of *things* and not of *names*, the latter being subsidiary, though indispensable, to the former.

mentary in the two last-mentioned insects. Again, some few of the species have the eyes pubescent, while others have them naked.

Sp. 1. Argiolus. *Alis latè cæruleis apice nigris, subtùs canis punctis oblongis diffõrmibus nigris.* (Exp. alar. 1 unc. 2—6 lin.)

Pa. Argiolus. *Linuù.*—*Levin,* pl. 36. f. 4—6.—Po. Argiolus. *Steph. Catal.*

Male above of a beautiful light blue, tinged with lilac: the anterior wings with a narrow black or dusky streak on the hinder margin, and a black and white fringe: the posterior with a delicate black marginal line and white fringe: beneath light gray; the anterior wings with a central slender lunulated spot, and six transverse black streaks, the costal one being placed by itself, and that towards the anal angle frequently geminated, sometimes obliterated, the fringe white: the posterior wings with about twelve scattered black dots, with the base fine blue: on the hinder margin of all the wings is an obsolete series of inverted crescents: the body is dusky above, with bluish hairs, gray beneath: the antennæ are black, annulated with white.

The female differs in being of a paler colour above, with the anterior wings broadly margined with dusky or black, leaving only a large subtriangular discoidal blue patch, reaching to the thinner edge: the posterior have the costa dusky, and an obsolete row of blackish dots on the hinder margin; beneath she resembles the male.

This species varies considerably in size, and in the width of the dusky margin of the wings in the female; in some specimens the latter occupies nearly half of the anterior wing, and the posterior one has but a small subtriangular discoidal blue patch; and the anterior wings are also frequently marked above with a strong transverse black line.

Both sexes also vary much in the number and strength of the black dots beneath; in some the transverse row on the anterior wings is composed of such large dots as almost to form a continuous line, while others have nearly imperceptible points, varying in number from four to seven; the central line is sometimes nearly straight; the posterior wings have sometimes a bent line in the centre, and the dots vary in number, and are more or less obliterated or confluent.

The caterpillar is hairy, yellowish-green, with a bright green line down the back, and black head and wings; it feeds on the buckthorn (*Rhamnus frangula*) and holly (*Ilex europæus*). The chrysalis is smooth, brown and green, with a black dorsal line.

This variable insect occurs in several places near the metropolis; I have taken it repeatedly on Epping Forest, and near Ripley, where the holly abounds, and also near Dartford. It is also found in Norfolk, Suffolk, Hants, and Devonshire; and appears twice in the year, about the middle of May for the first time, and towards the end of August for the latter.

Sp. 2. *Alsus*. *Alis suprâ fuscis cæruleo-micantibus, subtùs cinereis strigâ unicâ punctorum ocellatorum*. (Exp. alar. 10 lin.—1 unc. 1 lin.)

He. *Alsus*. *Fabricius*.—Pa. *Alsus*. *Lewin*, pl. 39. f. 3, 4.—Po. *Alsus*. *Steph. Catal.*

All the wings above dusky-brown with a blue gloss, especially at the base: the anterior beneath ash-coloured, with a discoidal black lunule, edged with whitish, and six or seven ocellated dots, with a white iris, placed transversely near the hinder margin: the posterior have a discoidal streak, about seven or eight ocelli, forming a transverse band in continuation of that on the anterior wings near the hinder margin, and four or five scattered ocelli towards the base; all the ocelli are coloured as before: the cilia of all the wings are white: the body is dusky, with bluish hairs: the antennæ are dusky, annulated with gray. The female is very similar, but rather more obscure.

The number of ocellated dots varies considerably; I have a specimen with only four on the transverse streak of the posterior wings.

The caterpillar and chrysalis are not known.

Not a very abundant species: it occurs in fields and woody places, and has been captured at South Creek, Norfolk; Brandon Warren, Suffolk; Dartmouth, Devonshire; near Andover, Hants; Birchwood and Darent-wood, Kent; and near Hertford: at the latter place I have taken it myself. It appears at the end of May and the beginning of July.

Sp. 3. *Acis*. *Alis suprâ cæruleis (aut fuscis) margine nigro, subtùs cinereis strigâ unicâ communi punctorum ocellatorum*. (Exp. alar. 1 unc. 2—4 lin.)

Pa. *Acis*. *Wien. Verz. teste Ochsenheimer*.—Po. *Acis*. *Steph. Catal.*—Pa. *Cymon*. *Lewin*, pl. 38. f. 6.

Male with the wings above deep blue, with a narrow black line on the hinder margin, and dusky nervures; the cilia pure white: beneath cinereous; the anterior wings, with the base bluish, a central black dot cinctured with white, between which and the hinder margin is a transverse bent series of six round black ocellated dots with white pupils: the posterior wings have also a central spot, and an irregular broken series of ocellated dots between it and the hinder margin, and frequently one or more ocelli towards the base, which is bluish: the cilia are white: the body is dusky with blue pubescence: the antennæ dusky, annulated with gray. The female is brown above.

The ocellated dots, as usual in this variable genus, are more or less obliterated; a character which in this species has been erroneously assigned as a sexual difference: in some specimens the transverse series on the anterior wings is composed of four ocelli only, the costal one, and that near the anal angle, being obsolete; others have five, and I possess one with seven, the anal one being geminated: the continuous band on the posterior wings also varies by the obliteration or confluence of the ocelli, which are sometimes nearly all

wanting; I have one specimen with the three central dots of the series alone, while in a second the dots are all so large as to become united: the discoidal streak and the basal ocelli on the posterior wings beneath vary also, without reference to sex.

Oehsenheimer refers Lewin's figures, above quoted, to *Po. Argiolus*, notwithstanding they correctly represent the present insect, and Lewin has figured *Po. Argiolus* as also quoted by that author.

A scarce, or rather a local species: found in chalky districts in Norfolk, Cambridge, Yorkshire, and Dorsetshire; also near Brockenhurst and Amesbury, Hants: and on Windlesham-heath, Surrey, towards the end of May and of July.

Sp. 4. *Arion*. *Alis suprà fuscis, disco cœruleo maculisque atris, subtùs canescentibus punctis ocellaribus.* (Exp. alar. 1 unc. 6—8 lin.)

Pa. *Arion*. *Lin.*—Lewin, *pl. 37.*—*Po. Arion*. *Steph. Catal.*

Wings above brown with a blue disc, or blue with a brown margin posteriorly; anterior with a central transverse black spot, behind which is an undulated row of elongate or ovate black bars, the bars disposed longitudinally, and varying in number from two to seven, the middle ones being largest, and those towards the costa least; the posterior wings have some obsolete ocelli towards the hinder margin: beneath, dusky ash-colour; the anterior wings with eight or nine ocelli, two in the centre, the one towards the base usually minute, and about seven forming an undulated band between them and the hinder margin, all with a black pupil and white iris: on the hinder margin are two rows of black wedge-shaped spots, or lunules, with a faint pale or whitish dot attached to each; the cilia white, with brown bars beneath: the posterior wings with the base blue-green, and having an angulated row of four ocellated dots, followed by a transverse discoidal crescent, and then by an interrupted angulated and waved band, composed of eight distinct ocelli, the inner but one being frequently double; beyond this, on the margin, are two rows of lunulated dots as in the anterior wings: cilia as in the anterior wings: body dusky, with bluish hairs above, hoary beneath: antennæ black, annulated with white. Female with the wings more dusky, and the discoidal spots larger.

Var.  $\beta$ . Wings nearly immaculate above.

Var.  $\gamma$ . Female with all the wings bearing large black dashes on the upper surface; the anterior beneath with eleven large ocellated spots, three central, the rest forming the usual band; the posterior below with thirteen very large ocelli, four basal, eight in the waved band, and one adjoining the discoidal streak; all the wings with the two hinder rows of wedge-shaped dots.

An insect of great rarity, found on commons and pastures in the beginning of July; it was taken by the late Dr. Abbott near Bedford, in the Mouse's Pasture, where Mr. Dale caught a single specimen in 1819: it has also been caught near the signal-house

on Dover-cliffs, and on bramble blossoms, in rocky situations, in North Wales: several specimens were taken in Kent during the past season, I believe in the vicinity of Deal: it is said to have occurred near Winchester in plenty; and Lewin tells us that it is found on Marlborough-downs, Wilts, on hills near Bath, and near Clifden, in Bucks; but the last locality probably belongs to *Po. Alcon*, which may prove to be an extraordinary variety only of *Po. Arion*.

† Sp. 5. *Alcon*. *Alis supra cæruleis (aut fuscis) immaculatis, margine fusco, subtus fusco-cinereis serie duplici punctorum ocellatorum.* (Exp. alar. 1 unc. 6 lin.)

Ha. *Alcon*. *Fabricius*.—*Po. Alcon*. *Steph. Catal.*

Wings above, in the male, resembling var.  $\beta$ . of the preceding species; beneath brownish-ash, the anterior with ocellated black dots, as in the preceding, and a series towards the hinder margin, which has not the lunulated spots, as in *Po. Arion*: the posterior wings also bear ocelli, as in the last-named insect, and a series behind, but the hinder margin is nearly immaculate. The female is nearly all brown above, with some obsolete dots, but resembles the male beneath.

Of this insect I have seen but one specimen, which is in the rich lepidopterous collection of Mr. Haworth: it was captured by the late Mr. Jones, known by his paper on the neuration of the wings of the Linnæan *Papilionæ*, in Buckinghamshire, many years since.

Sp. 6. *Corydon*. *Alis supra argenteo-cæruleis (aut fuscis) fasciâ marginali atrâ, subtus fusco-cinereis punctis ocellaribus numerosis; ciliis supra atro punctatis.* (Exp. alar. 1 unc. 4—7 lin.)

He. *Corydon*. *Fabricius*.—*Pa. Corydon*. *Lewin, pl. 36*.—*Po. Corydon*. *Steph. Catal.*

Male above of a rich pale silvery-blue, with the hinder margin and nervures black or dusky, with the cilia white, interrupted by dusky; the posterior wings with five sub-ocellated spots in the hinder margin: beneath the anterior wings are whitish, ocellated nearly as in *Po. Arion*, but usually with two or three additional spots towards the base of the wing; and beyond the undulated band of ocelli is an interrupted brown streak, between which and the hinder margin is a series of sub-ocellated round dots, with a whitish circle: the cilia white, interrupted with brownish at the tip: posterior wings cinereous, greenish-blue at the base, with about twelve ocellated spots, four at the base, and eight forming an angulated band behind the middle; the pupils black with a white iris; in the centre of the wing, between the bands is a white sub-triangular spot, which is sometimes immaculate, and sometimes bears a dusky or black dot in its centre; on the hinder margin is a series of ocellated black spots, with a white iris, marked internally with orange, and tipped with a black angulated line pointing inwards; this series is connected by a pure white oblong patch to the external ocellated band: cilia white. Female above

brown, with a pale discoidal dot on each wing, that of the anterior generally with an elongate black pupil; the hinder margin of the anterior wings with an undulated whitish streak; the posterior have also a similar band, and not unfrequently a series of bright ocelli, internally fulvous, externally whitish, with black pupils: beneath all the wings are griseous, the posterior deepest, and ocellated, as in the male; the ocelli are, however, more distinct, from the contrast of the whitish circle with the griseous ground; the fulvous-orange spots on the hinder margin of all the wings are more distinct than in the male, and the cilia are browner.

Var.  $\beta$ . *Steph. Catal.* Above brown, with a blue disc, and a whitish discoidal dot with a black pupil: beneath, the posterior wings have a discoidal white cinetured crescent, with a waved band of seven undulated spots towards the hinder margin; the fringe as in var.  $\alpha$ .

Var.  $\gamma$ . Male with the hinder margins of all the wings above with a very deep blackish fimbria; the ocelli on the posterior wings very strong.

Var.  $\delta$ . With the humeral spots beneath the anterior wings obliterated.

Var.  $\epsilon$ . All the wings beneath with the central discoidal spot alone; the margins with faint rudiments of ocelli.

Var.  $\zeta$ . With the spots more or less confluent beneath; sometimes prolonged into dashes: the colour of the upper surface of the wings in both sexes varies much; the female has been found with the disc fine rich blue.

Decidedly a local species, affecting chalky districts, about the middle of July, but occurring in the utmost profusion where found, especially on the downs, and under the cliffs, near Dover; also near Newport, in the Isle of Wight, and Shoreham, in Sussex: it formerly appeared in tolerable abundance near Darent-wood, but I have not observed it there for many years. “Little Blakenham, Moulton, and Eriswell, Suffolk.”—*Miss Jermy*n. “Puddle-Hinton-downs, and Hodd-hill, Dorset; Old Sarum in plenty; Grymes’ Dyke, Oxon, and stone-quarries near Peterborough.”—*J. C. Dale, Esq.* “Abundant on the Devil’s Ditch, in July; also in Hinton chalk-pits: the females appear later than the males, and much less frequent.”—*Rev. L. Jenyns*.

Sp. 7. Adonis. *Alis caruleo-argenteis, aut fuscis, strigâ marginali atrâ, subtis cinereis punctis ocellaribus numerosis, ciliis utrinque albo nigroque maculatis.* (Exp. alar. 1 unc. 3—6 lin.)

Hc. Adonis. *Fabricius*.—Pa. Adonis. *Levin, pl. 36, f. 2.*—Po. Adonis. *Steph. Catal.*

Male above of a most beautiful azure or shining silvery blue, varying in lustre according to the view, and sometimes tinged with greenish or lilac, the hinder margin of all the wings with a slender black line, the cilia white, interrupted by brown: beneath greatly resembling the preceding insect, but the spots more distinctly ocellated; the margin with the fulvous ocelli of a deeper hue.

and somewhat larger, and the ground-colour deeper. Female deep brown, with a black discoidal spot, the disc frequently bluish; the hinder margin of the posterior wings with a slightly ocellated fulvous streak, and sometimes a dash of a similar colour towards the anal angle of the anterior wings; in other respects similar to the male, but the colour beneath much darker, and the ocelli more distinct; the hinder margin of the posterior wings grayish.

Var.  $\beta$ . With the ocelli beneath more or less confluent.

Var.  $\gamma$ . With the fulvous band on the hinder margin of all the wings obliterated.

Var.  $\delta$ . With the humeral spots of the anterior wings beneath obliterated.

Var.  $\epsilon$ . With all the ocellated dots beneath very small, and several of them deficient.

Var.  $\zeta$ . With the central discoidal spot alone remaining, the marginal fascia merely indicated by a few indistinct dusky lunules.

The varieties in ocellation (as in the other species) are endless: some have the ocelli nearly round, others more or less elongate: some very large, others extremely small: the white blotch on the posterior wings beneath also varies much in size and form.

Caterpillar green, with dorsal rows of fulvous spots: it feeds on clover. The chrysalis is green or brown.

This truly beautiful and splendid insect is, like the preceding, extremely local, but more generally distributed; and there are two broods annually, the first towards the end of May, the other about the middle of August. I have taken it in every place where I have met with that species, at Dover, Newport, the Sussex downs, and near Darenth: at Coombe-wood, Dover, it is in greater profusion than any other of the genus; it is also very plentiful on all the downs between Hastings and Brighton. "Moulton and Dalham, Suffolk."—*Miss Jermyn*. "Amesbury-hill."—*Rev. G. T. Rudd*. "Puddle-Hinton-downs, Hodd-hill, and Knowle-hill, Dorset."—*J. C. Dale, Esq.* "Near Birmingham."—*Mr. Weaver*.

Sp. 8. *Dorylas?* *Alis cyaneis aut fuscis, subtus cinereis, maculâ mediâ strigâ punctorum ocellatorum posticâ marginæque albicante.* (Exp. alar. 1 unc. 4 lin.)

Pa. *Dorylas.* *Wien. Verz. teste Ochsenheimer.*—Po. *Dorylas?* *Steph. Catal.*

The indigenous specimens which are presumed to be synonymous with the above insect, and which, according to Ochsenheimer, have been figured by Lewin, in his plate 38, f. 1 and 3, I do not think sufficiently distinct from my var.  $\gamma$  of Po. Adonis; nevertheless, as I am not positive of their identity, I shall for the present consider them as distinct. The male is of a bright blue above, and has a slender black marginal line as in Po. Adonis, but the cilia are immaculate: beneath, the anterior wings are pale cinereous, and have a central transverse black streak on the disc, followed by a waved row of black dots faintly cinctured with whitish; there is then a delicate interrupted band



of fulvous, terminated with a whitish margin: the posterior wings resemble those of *Po. Adonis*, but they are without the black streak in the centre of the triangular discoidal spot; the ocelli are fewer in number, and the margin has a few fulvous spots, and is banded with whitish; the cilia are immaculate. The female is brown above; in other respects she resembles the male.

Taken with the foregoing insect, at Darent, in June, 1812, but not met with afterwards.

† Sp. 9. *Icarius*. *Alis cæruleis aut fuscis, nigro marginatis, subtus cinereis, serie arcuatâ punctorum ocellarium maculisque marginalibus fulvis.* (Exp. alar. 1. unc. 4 lin.)

*Pa. Icarius.* *Ochsenheimer?*—*Po. Icarius.* *Steph. Catal.*

Above rich pale blue, with a broad posterior black margin to all the wings, the cilia whitish, obscurely dotted with dusky, beneath deep cinereous; the anterior wings with a central discoidal dot, and a bent series of four or five ocelli between it and the margin; posterior wings with a central bent streak, followed posteriorly with an irregular band of black subocellated dots, then a fulvescent streak and a few marginal spots.

This insect is given in the Entomological Transactions, by Mr. Haworth, as the *Pa. Amandus* of Hübner; a name changed by Ochsenheimer, from its being an adjective, to the one above used, which was imposed by Esper. It approximates so very closely to the following species, that I conceive it will eventually prove a mere variety of that insect; and how far it may really be synonymous with the *Pa. Icarius* of Esper, or the *Pa. Amandus* of Hübner, I will not venture any opinion, as I do not possess the insect.

“Taken in Kent.”—*A. H. Haworth, Esq.*, who has two specimens.

Sp. 10. *Alexis*. *Alis cæruleis immaculatis, aut fuscis, strigâ marginali atrâ, subtus cinerascensibus, punctis numerosis ocellaribus fasciâque ad marginem maculari fulvâ, ciliis albis.* (Exp. alar. 1 unc. 1—5 lin.)

*Pa. Alexis.* *Hübner.*—*Po. Alexis.* *Steph. Catal.*

Male above of a bright lilac blue, with the costa of the anterior wings white, and a slender marginal black line to all the wings; the fringe usually white, immaculate: beneath very similar to *Po. Adonis*, but the colour of all the wings rather deeper, with the hinder fulvous spot on the anterior more distinct, and of the posterior forming a continuous band: as in *Po. Adonis* the anterior wings have two ocelli placed transversely towards the base of the wing, then an ovate central spot with a transverse black streak, followed by a regularly curved transverse series of ocelli, seven in number, between which and the hinder margin are, first, a row of dusky lunules pointing outwards, and edged externally with fulvous, and, secondly, a series of dusky spots on a whitish ground; the extreme margin is black: the posterior wings also greatly resemble those of *Po. Adonis*, the base is usually bluish, with four ocelli placed obliquely towards the inner margin: the disc has a triangular white spot, which has most frequently a black centre, behind this is a wavy

series of eight or nine ocelli, followed by a row of black lunules pointing outwards, and externally bordered with a fulvous patch, with a black spot at the edge, on a white or cream ground, the extreme edge black; a white blotch connects the fulvous band with the waved series of ocelli. Female above brown, with the disc more or less blue, with a fulvous band at the hinder margin more or less distinct in different individuals; that of the posterior wings subocellated; the centre of each lunule of which the fascia is composed bearing a black spot: beneath, all the wings are deep ash-colour or drab, with the ocelli very distinct and large: the fringe above and below in both sexes is white, with the base dusky or brown, particularly in the female.

Var.  $\beta$ . *Steph. Catal.* With the two transverse ocelli towards the base of the anterior wings beneath obliterated.

Var.  $\gamma$ . *Steph. Catal.* The wings very pale lilac-blue above, and the fulvous band on the hinder margin of all beneath very obsolete.

Var.  $\delta$ . *Steph. Catal.* With the anterior wings beneath with a large kidney-shaped blackish spot cinctured obscurely with white, the concave side turned towards the interior margin; the posterior wings with the spot next the costal margin kidney-shaped, the concave side towards the disc: the number of ocelli in all the wings varies considerably, and the kidney-shaped spot is sometimes interrupted.

Var.  $\epsilon$ . All the wings beneath with a triangular discoidal spot only, the hinder margin of the anterior with a few indistinct dusky marks, and of the posterior with a fulvous band terminated internally with a series of black wedge-shaped spots, and externally with black dots on a white ground.

The varieties of this species are innumerable, both in size, form, and colour, some of the females having the anterior wings very much rounded at the tip, others somewhat acute; the hinder margin of the anterior wings is frequently spotted with white, and the disc sometimes has a round white dot with a central black spot. Some specimens are remarkably clear, and so transparent that the inferior ocelli are plainly observable on the upper surface of the wings. I have several females with the fringe entirely brown, and a few quite white: others with the upper surface of the wings nearly as blue as that of the males, with a central black spot, while some are plain brown, without the least vestige of blue. The number of ocelli varies greatly, and several of them are frequently blind.

Caterpillar slightly hairy, bright green, with a dark dorsal line, and triangular yellow spots adjoining: it feeds upon grasses, the wild liquorice (*Astragalus glysyphyllos*) and wild strawberry (*Fragaria vesca*). The chrysalis is dark brown.

The commonest of our blue butterflies, occurring in meadows, pastures, by the sides of grassy lanes, and in marshy places, in all parts of the kingdom: there are two broods in the year, the first appearing towards the end of May, the second about the middle of August. I cannot but suspect that some of the reputed varieties of this insect are really distinct species.

Sp. 11. Eros. *Alis pallidè cyaneis immaculatis, aut fuscis, subtùs cinereis, punctis numerosis ocellaribus, posticis fasciâ marginali flavâ oblitteratâ.* (Exp. alar. 1 unc. 2 lin.)

Pa. Eros. *Ochsenheimer.*—Po. Eros. *Steph. Catal.*

The male above very pale greenish-blue, with a narrow marginal black streak, the posterior wings with a few blackish spots on the margin; the cilia white: beneath greatly resembling the preceding insect, brownish-gray, with the base of the wings greenish, the ocelli nearly as in Po. Alexis, but the margin with a faint yellowish (instead of fulvous) band. The female (according to Ochsenheimer) is brown above, as in the common species.

Var. ?  $\beta$ . Colour of the upper surface rather more intense, the inferior ocellated nearly as in Po. Alexis, but destitute of a fulvous marginal fascia, in lieu of which it has a series of ocelli with minute black irides, cinctured with white, faintly tinted with yellowish towards the inner side. This variety is probably synonymous with the Pa. Labienus of the first edition of the Butterfly Collector's Vade Mecum, unless var.  $\gamma$  of the preceding insect be the kind intended.

This is probably a distinct species, and may be known by the peculiarly pale silvery or greenish-blue colour of its upper surface; but the inferior side is far too similar to that of Po. Alexis to constitute a specific difference. Mr. Haworth's specimen was found, I believe, in Kent; and mine, which I have characterized by the var.  $\beta$ , I took in July 1826, in a grassy lane near Ripley, Surry.

Sp. 12. Argus. *Alis saturatè caruleis nigro marginatis, aut fuscis subtùs lacteicis, punctis ocellaribus fasciâque fulva, posticis ad marginem ocellis caruleo-argenteis.* (Exp. alar. 1 unc. 2—4 lin.)

Pa. Argus. *Linne.*—*Lewin, pl. 39. f. 5—7.*—Po. Argus. *Steph. Catal.*

Male with the wings above deep blue, tinged with lilac, the hinder margin broad and black, the costa white; beneath grayish-blue, the latter colour predominating at the base: anterior wings with a central ocellus, behind which is a bent series of ocelli, usually composed of six; the third, fourth, and fifth from the costa being largest, and generally elongated; the sixth frequently double; the hinder margin with a double band of black spots, frequently adorned with a blush of fulvous: posterior wings with three ocelli at the base placed obliquely; a somewhat triangular discoidal spot, with a large black central dot; behind this a waved series of ocelli, about eight in number, followed by an articulate band of orange tawny, containing several brilliant silvery blue spots on a black ground, and bordered internally with a series of black crescents, and externally with whitish; the external margin of all the wings black: cilia white, sometimes with a few black dashes at the base. Female above brown, the disc sometimes bright blue, with, or without, a marginal tawny band, which is usually most obsolete in the anterior wings; beneath grayish, with the ocelli larger and more distinct than in the male, and a dentated white band traversing all the wings, between the ocelli and the fulvous band: cilia brown.

Var.  $\beta$ . Smaller, the wings narrower, blue above with a broad black margin to all the wings; the under side of the male of a deep grayish or drab colour; the ocelli very distinct as in the female, and the oblique series on the posterior wing consisting of four.

† Var.  $\gamma$ . With the ocelli united into longitudinal streaks. In Mr. Haworth's cabinet.

† Var.  $\delta$ . The upper surface of all the wings of a pale fulvous tawny; the exact colour of that of *Hipparchia Pamphilus*. In Mr. Hatchett's collection. Caterpillar green, hairy, with whitish tubercles, with a reddish brown dorsal line, edged with white, another on the sides, and some oblique stripes of the same; head and true legs brown: it feeds on common broom (*Spartium scoparium*), common melilot (*Trifolium melilotus*), and saint-foin (*Hedysarum Onobrychis*). Chrysalis at first green, afterwards brown.

Also a local species, but occurring in tolerable plenty on Ripley-green, and about the Sheep Leas in Surry, about the middle of July; it also occurs near Coombe and Darent woods; its usual haunts are commons, fields, and marshy places; it does not appear to be partial to chalky districts. "Woodhay-common, Hauts, near Newberry, Hordwell-cliff, Hants; Collhill, near Wimborne, and Parley-heath, Dorset; Whitewood, near Gamlingay, Cambridgeshire."—*J. C. Dale, Esq.* "Near York, in the autumn of 1827."—*G. Wailcs, Esq.* "Bixley Decoy, Nacton, Suffolk."—*Miss Jermyn.* Var.  $\gamma$ . "Salt Marsh, near Holt, Norfolk."—*A. H. Haworth, Esq.* Var.  $\delta$ . "Coombe wood."—*Mr. Hatchett.*

Sp. 13. Agestis. *Alis fuscis, fasciâ utrinque maculari rufâ, subtùs canescentibus, punctis ocellaribus numerosis, alis anticis suprâ puncto discoidali nigro.* (Exp. alar. 1 unc. 1—3 lin.)

Pa. Agestis. *Wien. Verz., teste Ochsenheimer.*—Po. Agestis. *Steph. Catal.*—Pa. Idas. *Lewin, pl. 39. f. 1, 2.*

Wings above in both sexes of a beautiful silken brown, with a black spot in the centre of the anterior, and with an orange macular band at the posterior margin of all the wings: costa of the anterior wings white; fringe white, varied with brown; beneath brownish ash-colour: anterior wings nearly as in Po. Argus, but the ocelli fewer, and the marginal fulvous band very broad and brilliant in colour: posterior wings with the ocelli nearly as in the last-named insect; but in lieu of the dentated white band between the undulated series of ocelli and the fulvous band, a white discoidal blotch, as in Po. Adonis and Alexis: fringe white, varied with brown. Female differs in being rather lighter coloured above, with the hinder macular band very broad, and reaching to the costa of the anterior wings, and spotted with black on the posterior.

The number of ocelli, on the wings beneath, varies exceedingly; as does also the breadth and splendour of the marginal fulvous band; the latter being nearly obliterated in some specimens.

More abundant and more generally diffused than the preceding species, appearing about the beginning of June, and again towards the middle of August, at Ripley, Oak of Honour Wood, Peckham, near Dover, Brighton, Hertford, &c. “Near Norwich, Little Blakenham, Bixley Decoy, Race-ground, Ipswich, on the shore near Languard Fort, Suffolk, and Wrabness, Essex.”—*Miss Jermy*. “Seaham Dean, near Sunderland.”—*W. C. Hewitson, Esq.* “Grymes’ Dyke and Glanville’s Wootton, Dorset, and Old Sarum.” *J. C. Dale, Esq.* “Devil’s Ditch, in tolerable plenty; occurs also near Ely.”—*Rev. L. Jenyns*.

Sp. 14. *Artaxerxes*. *Alis fuscis, anticis utrinque maculâ discoidali albâ, posticis lunulis rufis, subtus margine albo rufo punctato.* (Exp. alar. 1 unc.—1 unc. 2 lin.)

He. *Artaxerxes*. *Fabricius*.—Pa. *Artaxerxes*. *Levin, pl. 39. f. 8, 9.*—Po. *Artaxerxes*. *Steph. Catal.*

Wings above in both sexes black brown, with a discoidal white spot on the anterior and sometimes on the posterior; and like the preceding species all the wings have an orange-coloured band, but considerably more obsolete than in the male of that insect: fringe white, brown at the base: beneath the anterior wings have a central white spot, between which and the posterior margin is a curved series of five similar spots, followed by a broad orange-coloured band, terminating interiorly in a series of black and white crescents, and externally in a white spot with a black pupil: this band is continued on the margin of the posterior wings, and has a large white blotch on its interior edge; between which and the base of the wing are several scattered white spots, placed like the ocelli in *Po. Agestis*.

Var.  $\beta$ . The white spots on the under surface of all the wings with minute black pupils.

As in its congeners this insect varies much in the number and disposition of the white spots on the inferior surface of the wings, as well as in the width and obliteration of the orange marginal fascia.

† Sp. 15. *Titus*. “*Alis fuscis immaculatis, posticis subtus ocellatis strigâque posticâ maculari fulvâ.*”—*Fabricius*.

He. *Titus*. *Fabricius* (!)—*Po. Titus*. *Steph. Catal.*

All the wings above brown, without spots; beneath also brown; the anterior with a hinder band consisting of white and black lines; posterior with a discoidal narrow spot, and a band consisting of black spots cinctured with white: towards the margin there are red spots marked with a black dot.

Inhabits England; *Mr. Drury*. The above description and locality are from *Fabricius*; but I know of no indigenous insect which will agree with the former, which it is possible may have been drawn from some most extraordinary variety of one of the preceding species.

A very local species, and hitherto supposed to be peculiar to Scotland, but it has lately been taken in the north of England; it frequents meadows and grassy places, like its congeners, appearing first about the middle of June, and secondly in August, and is most abundant at the foot of Arthur's-seat, near Edinburgh. "Salisbury-craigs, King's-park, and near Duddingstone-loch, Pentland-hills, Lord Roseberry's park near Queensferry and Rosslyn castle, Scotland."—*J. C. Dale, Esq.* "Jardine-hall, Dinwoodie-green near Lockerby, Dumfrieshire."—*Sir W. Jardine, Bart.* "Seaham-dean near Sunderland."—*W. C. Hewitson, Esq.* "A few specimens taken on the coast of Durham near Sunderland."—*G. Wailes, Esq.* "I once observed it on Dartmoor, 23d August, 1823."—*Dr. Leach.*

#### FAMILY IV.—HESPERIIDÆ, *Swainson.*

*Antennæ* with a distinct fusiform club, generally furnished at its extremity with a hook: abdomen robust: legs in both sexes perfect, all formed for walking; *hinder tibiæ* with two pair of spurs, one pair placed at the apex, the other towards the middle, as in the *Crepuscularia* and *Nocturna Latr.*: *claws* minute, bifid: *posterior wings* with a groove to receive the abdomen. *Larva* pubescent or naked, fusiform, with a large head: *pupa* short, smooth, enclosed in a web, with a slender transverse thread.

The Hesperiidæ are distinguished from the other Diurna by having two pairs of spurs to their posterior tibiæ, and a hook at the extremity of their antennæ. They are small insects, but their body is very robust, and they fly with rapidity and strength, frequently resting on leaves and branches, and elevating their posterior wings above during their repose, the anterior being kept horizontally displayed. Their flight is very short, and performed with frequent jerks; whence they have obtained the appellation of *Skip-pers*. The prevalent colour is brown or dusky, with pale whitish, yellow, or transparent spots.

I have merely distinguished two British genera, which may be thus discriminated:

<i>Antennæ</i> capitulo	{	incurvato: . . . . .	19. THYMELE.
		recto, aut vix curvato: . . . . .	20. PAMPHILA*.

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\* Pa. Bucephalus apparently belongs to a different genus; but my objection to multiply genera without powerful reasons has induced me to consider it as belonging to a section of the genus Pamphila.

GENUS XIX.—THYMELE, *Fabricius*.

*Palpi* rather long, thickly clothed with hair; the terminal joint somewhat obtuse, projecting rather beyond the hirsuties. *Antennæ* a little elongate, with a curved fusiform club, not terminating in an acute hook: *anterior wings* short, broad, triangular, rounded posteriorly; *posterior* broad, rounded-triangular, entire, or slightly denticulated. *Larva* naked. *Chrysalis* with the head-case notched.

Thymele differs from Pamphila by the comparative brevity of its wings, and their rotund form: the antennæ are considerably more elongate, and their capitulum is incurved, and not furnished at its extremity with a hook: the palpi are longer and more hairy: the costa of the anterior wings is rounded at the base, and in the males it has a longitudinal fold, as in many of the Tortricidæ. The species are generally distinguished by tints of black or dusky, spotted more or less with white, or pale colours.

Sp. 1. Alveolus. *Alis nigris albo maculatis punctatisque, posticis subtilis virescentibus, maculis punctisque albis, ciliis albis nigrisque.* (Exp. alar. 10—14 lin.)

Pa. Alveolus. *Hübner.*—Pa. Malvæ. *Lucin*, pl. 46. f. 8, 9.—Th. Alveolus. *Steph. Catal.*

Above black or dusky, with numerous white or cream-coloured quadrangular notched spots, the black ground thickly irrorated with whitish; the posterior wings with the white spots in the centre, forming an interrupted band: all the wings with a white or cream-coloured fringe barred with black: beneath, the anterior wings are pale greenish-gray, with white spots, as above; the posterior wings are yellowish or grayish-green, with the nervures paler, and spotted as above, but the spots rather larger: fringe with the black bars narrower than on the upper surface.

Var. *β*. *Steph. Catal.* With an oblong white or cream-coloured blotch on both sides in the centre of the anterior wings towards the anterior margin, which is frequently doubled by the confluence of two contiguous spots; the rest of the white spots on the anterior wings are more oblong and larger than in var. *α*.

Both the above varieties are subject to still other variations: the first frequently occurs with all the spots on the anterior wings very minute, while those of the posterior are remarkably large, and vice versa. Again, var. *β* occurs with the upper wings nearly all whitish or cream-coloured, with a single whitish spot alone in the centre of the posterior, while others have a central and marginal fascia of spots. It may be added that var. *β* has been considered as a distinct species, and is apparently synonymous with the *Hesperia Lavatera* of Fabricius; but I have most satisfactory proofs of the insect in question being a mere variety of Th. Malvæ, one of my specimens having the character of var. *α* on one anterior wing, and of var. *β* on the other; and I possess a series gradually varying from the confluent to the simple spots on all the wings.

Caterpillar unknown, that of Th. Malvæ having been given in lieu of the proper one.

An elegant, variable, and far from uncommon insect; frequenting woods, commons, dry banks, and meadows, about the end of May: it is plentiful on Hertford-heath, near Bickendon and Bengoe, Herts, in Coombe-wood, at Ripley, Darenth, Epping-forest, &c. "In plenty near York."—*W. C. Hewitson, Esq.* "Near New-castle, common."—*G. Wailes, Esq.* "Collingbourne-wood, Wilts."—*Rev. G. T. Rudd.* "Hartly-wood, Essex."—*Miss Jermyn.* "In the fens of Cambridgeshire, plentifully."—*Rev. L. Jenyns.*

Sp. 3. Tages. *Alis denticulatis fuscis subtis griseis, punctis ulbidis albisque numerosis obsolete utrinque.* (Exp. alar. 1 unc. 1—4 lin.)

Pa. Tages. *Linne.*—*Lewin, pl. 45. f. 3, 4.*—Th. Tages. *Steph. Catal.*

All the wings above brown, more or less obsoletely clouded with ashy-gray, with several obsolete scattered whitish dots, and a marginal series of white spots: cilia brown, with the base gray: beneath griseous, with a few very obscure whitish dots towards the hinder margin. Male of a deeper colour than the female.

In fine specimens the gray markings on the anterior wings above are disposed in bands of zigzags, and are very distinctly marked: the costa has also a bright white spot towards the tip, anterior to the band of zigzags.

Caterpillar bright green, with a brown head, and yellow dorsal and lateral stripes dotted with black: it feeds on the Field erylngo (*Eryngium campestre*), and Bird's-foot lotus (*Lotus corniculatus*).—The chrysalis has the anterior part dull green, the posterior reddish.

Not a very abundant species, frequenting dry banks, wastes, commons, heaths, and woods, about the end of May and the middle

‡ Sp. 2. Malvæ. *Alis dentatis fuscis, cinereo undatis; anticis punctis fenestratis, posticis subtis punctis albis.* (Exp. alar. 1 unc. 4 lin.)

Pa. Malvæ. *Fabricius.*—*Stewart.*—*Don, xvi. pl. 567.*—Th. Malvæ. *Steph. Catal.*

Th. Malvæ has considerable resemblance to Th. Tages, but is easily known by its dentated wings: its upper surface is brown, with waving cinereous lines, and six transparent spots on the anterior wings: beneath, the posterior wings are dotted with white.

Caterpillar gray: head black, with four sulphur-coloured spots on the neck: it feeds on the common mallow (*Malva sylvestris*), and Marsh-mallow (*Althea rosea*).—Chrysalis bluish.

This species has doubtless been introduced into the indigenous Fauna by Stewart, owing to the unfortunate misappropriation of the Linnean name of Pa. Malvæ to Th. Alveolus by his predecessors: of the true Pa. Malvæ I have not seen an indigenous example, and therefore do not believe that it has ever been captured in England.



of July: rather plentiful on Hertford-heath, and at Darent, and abundant at Coombe-wood, near Dover. “At Hintelsham, Suffolk, in Norfolk and Dartmoor, Devon.”—*Miss Jermyn*. “Plentiful near York.”—*W. C. Hewitson, Esq.* “Near Carlisle.”—*T. C. Hcysam, Esq.* “Ashdown-Copse, Wilts.”—*Rev. G. T. Rudd*. “Glanvilles Wootton.”—*J. C. Dale, Esq.* “On the Devil’s Ditch, sparingly.”—*Rev. L. Jenyns*. “Common on heaths, near Newcastle, in June.”—*G. Wailes, Esq.* “Dorking.”—*Mr. Waterhouse*.

GENUS XX.—PAMPHILA, *Fabricius*.

*Palpi* short, compressed, very densely clothed with scales and short rigid hairs, or expanded and densely covered with scales only, the terminal joint slightly projecting beyond the hirsuties: *antennæ* not very long, with an abrupt fusiform club, varying slightly in form, and terminated generally in a hook: *head* rather large: *anterior wings* nearly triangular, slightly elongate, *posterior* rather ovate-triangular, with an obsolete emargination on the hinder margin, and sometimes a rudiment of a tail at the anal angle. *Larva* pubescent. *Chrysalis* with the front acuminate.

Fabricius having restricted his genus *Hesperia*, in the *Systema Glossatorum*, to a very different group of this family, I have adopted the name that he has there applied to the indigenous species, in preference to that of *Hesperia*, which is more generally employed in this country. The species may be known from those of the genus *Thymele* by the incrassated straight club to the antennæ, the superior robustness of the thorax and abdomen, the more acute anterior wings, and by the rather obsolete rudimentary tail at the anal angle of the posterior wings: their colours are tawny brown, with spots of a paler hue. There is considerable diversity of structure

† Sp. 4. *Oileus?* *Alis nigro alboque variis, posticis subtus cinereis, lineis nigris undulatis.*

Pa. *Oileus*. *Gmelin?*—*Haworth*.—Th. *Oileus*. *Steph. Catal.*

Wings rounded; anterior varied with black and white; posterior beneath cinereous, with waved black streaks: antennæ black: the club cinereous beneath. “Has been caught in Bedfordshire by the Rev. Dr. Abbott; and is in Lemans’ ancient English cabinet, now in the possession of Lee Philips, Esq. Manchester.”—*Mr. Haworth*, in page 334 of the *Entomological Transactions*: according to whom the insects in question are identical with a species he possesses from Georgia, in America: but may not the reputed indigenous specimens, which I have not seen, be rather identical with the Pa. *Fritillum*, *Hüb. pl. 92. f. 461—465?*

amongst the few which I have still retained in the genus, but as no material advantage would be gained by separating them into genera, I shall merely divide the genus into sections.

A. With the palpi very hairy: the antennæ rather long: head moderately large.

a. *The club of the antennæ moderately stout, straight, no hook at the tip.*

Sp. 1. Paniscus. *Alis supra nigro-fuscis fulvo maculatis, posticis subtilis fulvis maculis flavescensibus.* (Exp. alar. 1 unc. 2—3 lin.)

He. Paniscus. *Fabricius.*—Pap. Paniscus. *Don.* viii. *pl.* 254. *f.* 1.—Pam. Paniscus. *Steph. Catal.*

Wings above black-brown, spotted with tawny: anterior with a central blotch, followed by an interrupted band, intersected with black veins, with two smaller posterior spots, and a marginal band of tawny dots: posterior wings with three discoidal spots, and a row of dots, varying in number, parallel with the hinder margin, all tawny: fringe tawny, black at the base: beneath, the anterior wings are yellowish, with three discoidal spots, then four or five smaller posterior ones, and the nervures at the hinder margin brownish; the posterior wings yellowish-brown, with seven larger spots, five of which are on the disc, and five smaller on the hinder margin, all of a paler hue; on the hinder margin is a pale yellowish streak.

The colour and size of the spots vary greatly; and some specimens have the whole of the dusky-brown thickly irrorated with yellowish, both above and below: the sexes differ but little in colour.

‡ Sp. 2. Sylvius. *Alis anticis flavis nigro maculatis, posticis fuscis flavo maculatis.* (Exp. alar. 1 unc. 2 lin.)

Pap. Sylvius. *Knoch.*—Pam. Sylvius. *Steph. Catal.*

Anterior wings above fulvous yellow, with four discoidal spots, and seven or eight parallel with the hinder margin black; the hinder margin dusky, with a brownish fringe: posterior wings brown, with four discoidal spots, and about five towards the outer margin yellow; the outer margin brown, with a yellowish fringe: beneath, the wings are nearly concolorous, but the hinder margin of the anterior has a chain-like series of brown spots, united by a black line on each nervure with the margin; the posterior wings have a similar terminal band, but the discoidal spots are the same as on the upper surface; the brown ground is irrorated with yellow; the fringe is yellowish.

I imagine that the present insect was formerly placed in British cabinets, in lieu of the Pam. Paniscus, which, until recently, was with difficulty procured by the entomologists of this country: I have a specimen which I obtained from an old collection, in which it was called by the name just mentioned, and in that of G. Milne, Esq. F.L.S. are other specimens, but beyond these I have not sufficient authority for introducing this insect into our Fauna. Mr. Milne gave no further account of his insects than that he believed them to be Pam. Paniscus, but knew not their origin; of my specimen the authority is equally unsatisfactory.

Caterpillar dark brown on the back, with the sides paler, with two yellow longitudinal stripes; black head, and an orange-coloured ring round the neck: it feeds on the Great plantain (*Plantago major*.)

Generally reputed a scarce, but merely a very local, species; it occurs in great plenty in several parts of Northamptonshire and Bedfordshire at the end of May. “Clapham-park Wood, Bedfordshire, and Whitewood, Gamlingay, Cambridgeshire; near Luton, Bedfordshire; the Hanglands and another wood, at Milton in Northamptonshire, near Peterborough.”—*J. C. Dale, Esq.* “Between Woodstock and Enstone, Oxon.”—*Rev. W. T. Bree.* “Near Dartmoor, Devon.”—*Miss Jermyn.*

Sp. 3. *Linea. Alis fulvis, margine nigro, fæminæ immaculatis, maris lineolâ nigri crassiore, posticis subtis griseis.* (Exp. alar. 1 unc. 1—3 lin.)

He. *Linea. Fabricius.*—Pap. Thamas. *Lewin, pl. 45. f. 5—7.*—Pam. *Linea. Steph. Catal.*

Wings above tawny orange, immaculate, the nervures dusky, and the margin with a black streak; beneath, the anterior are paler, with the base brown and tip grayish; the posterior are tawny ash-colour, with a large tawny spot at the anal angle: fringe above rather tawny, with the base brown, beneath ash-colour. The male differs from the female in having an oblique black line in the centre of the anterior wings; which line is surrounded by a series of elongate rugose scales.

Less common than the Pam. *Sylvanus*, but nevertheless pretty abundant; it frequents the borders of woods and shrubby places, towards the end of July; at Coombe, Darent, Highgate, and Peckham woods, and near Ripley, Hertford, Dover, and Hastings. “In plenty near York.”—*W. C. Hewitson, Esq.* “Glanvilles Wootton.”—*J. C. Dale, Esq.* “On the Devil’s Ditch, Cambridgeshire, but not frequent.”—*Rev. L. Jenyns.*

b. *With the club of the antennæ very robust, abrupt, the tip with an acute hook.*

Sp. 4. *Sylvanus. Alis griseo fulvis, maculis quadratis suprâ flavis, subtis a'bidoflavescens.* (Exp. alar. 1 unc. 2—5 lin.)

He. *Sylvanus. Fabricius.*—Pap. *Sylvanus. Lewin, pl. 46. f. 1—3.* Pam. *Sylvanus. Steph. Catal.*

Wings above bright fulvous, with the hinder margin and the nervures brown, the margin itself with a strong black line; the anterior wings are obsolete spotted with fulvous, the spots being disposed as in Pam. *Comma*: the posterior wings are also similar to those of the last-named insect, but the spots are more indistinct; beneath fulvous, with the tip of the anterior wings slightly tinted with greenish, and an oblong black patch at the base; posterior wings obscure greenish, faintly spotted with yellowish-white, with a very slender

black marginal line: cilia fulvous. The male has a black line on the disc of the superior wings, and the nervures and marginal streak are broader and of a deeper black than in the female, in which sex the spots are more distinct on both surfaces of the wings. The black line on the disc of the anterior wings of the male is bordered towards the base with elongate scales resembling hair, and externally with rugose scales.

A very common species, chiefly found on the borders of woods; in plenty at Coombe and Darenth woods, and on Hertford-heath, about the end of May and again in July; not uncommon in the woody lanes about Ripley and on Clandon-common. "On Dartmoor, Devon."—*Miss Jermyn*. "Plentiful near York."—*W. C. Hewitson, Esq.* "Glanvilles Wootton."—*J. C. Dale, Esq.* "Ely, Bottisham, and elsewhere, in Cambridgeshire."—*Rev. L. Jenyns*. "Not yet found near Newcastle."—*G. Wailes, Esq.*

Sp. 5. Comma. *Alis fulvis aut griseis, fulvo aut albido maculatis, posticis subtus griseo-virescentibus maculis quadratis albis.* (Exp. alar. 1 unc. 2—5 lin.)

Pap. Comma. *Linnaeus*.—*Lewin, pl. 45. f. 1, 2.*—Pam. Comma. *Steph. Catal.*

Anterior wings of the male above fulvous, with a central linear black blotch interiorly denuded, and of a silvery hue, the scales between which and the anal

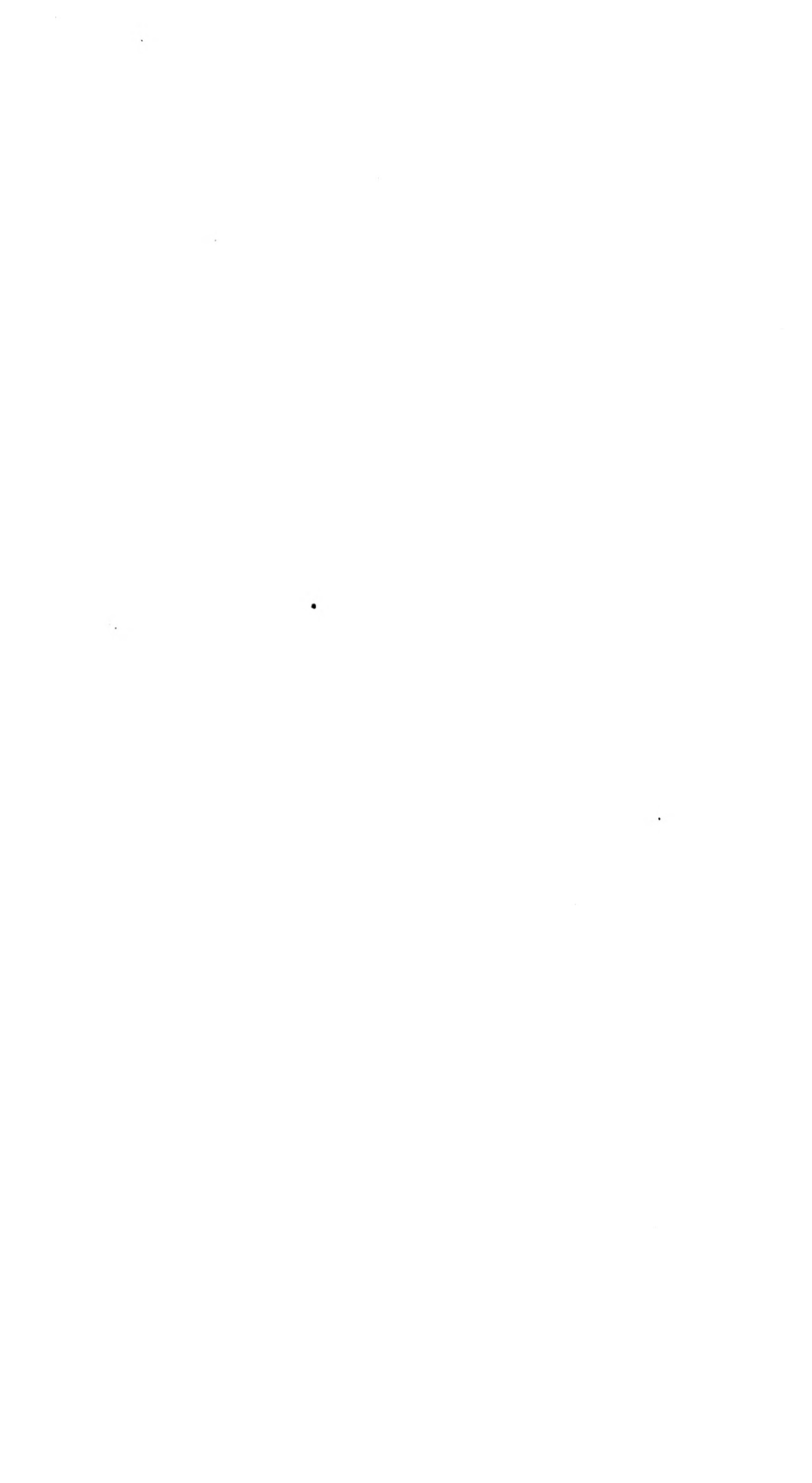
B. With the palpi short, densely clothed with scales, not hairy: antennæ very short, the club abruptly thickened, with a distinct hook: head very large.

† Sp. 6. Bucephalus. PLATE X. f. 1, 2. *Alis supra fuscis fulvo maculatis, subtus fulvis fusco maculatis.* (Exp. alar. 1 unc. 3 lin.)

Pam. Bucephalus. *Steph. Catal.*

Wings above brown, spotted with tawny: anterior with the costa pale tawny at the base, the colour gradually deepening to the apex, which is of a tawny brown; near the centre of the wing is an irregular tawny spot, and towards the tip near the costa a quadrate spot of the same hue; between these and the hinder margin is an oblique series of tawny spots, emarginate exteriorly, the spots becoming longitudinally elongated as they approach the thinner edge of the wing; the hinder margin is tawny-brown: cilia the same, but lighter at the anal angle of the wing: posterior with two longitudinal tawny streaks, one of them reaching to the hinder margin, the disc between with a series of elongate tawny spots, and a single one anterior to the abbreviated longitudinal streak; the cilia pale tawny-brown; a deep notch on the hinder margin of the wing towards the anal angle: beneath the anterior wings have a large dusky spot at the base, and a row of similar-coloured subovate spots towards the hinder margin, largest at the anal angle: the posterior wings are pale luteous-tawny, speckled with dusky or brownish spots, and towards the anal angle with a broad longitudinal streak of the same colour, bordered anteriorly with pale tawny; cilia of all the wings as above.





angle are rather elongated, and form a rugose velvet-like patch; the hinder margin brown, with an undulated band of whitish spots towards the apex: the posterior wings are clouded with brown, and have several obscure fulvous spots, towards the hinder margin, which is of a deep brown: fringe on all the wings yellowish, with the base brown: beneath with the base and apex greenish, the latter with an undulated band of square pale spots, corresponding with those on the upper surface, and of a paler colour; posterior wings greenish, with about nine white spots, of which three are placed towards the base, and the rest behind the middle, forming an incurved chain-like band: the fringe below whitish, spotted with brown at the base. Female larger, without the discoidal blotch on the anterior wings above: colour above more obscure, but the spots towards the apex of the anterior wings whiter than in the male: beneath with the disc of the anterior wings dusky, and an irregular band of whitish subquadrate spots towards the apex; posterior wings as in the male,

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“Taken in the neighbourhood of Barnstaple in Devonshire.”—*W. Raddon, Esq.*, who possessed two specimens of the insect, which he assures me were captured by himself in the above locality several years since. I have therefore on his testimony admitted the species; but I cannot avoid surmising that its origin is questionable, and that the specimens above alluded to were probably imported in one of their earlier states, among the timber or other stores which Mr. Raddon acquaints me came direct from the North American continent to Barnstaple. I am induced to say thus much from the circumstance of the section of the *genus* to which this insect belongs being without any other exception exclusively found in America; but it is nevertheless possible that the eastern limit of the group may extend to the west of Europe; at all events it is necessary for me to notice the communication; and I have also, through the kindness of Mr. Raddon, given a figure of the insect, as it appears to be a nondescript, in order to enable others to recognise it, should they be fortunate enough to ascertain any thing further relative to the real origin of the species; but for my sentiments respecting the admission of similar species into the Fauna of any country, I must refer to the observations subjoined to *Deilephila Celerio*, and here express my opinion that the present insect is an imported species and not an aboriginal native of Britain.

† Sp. 7. *Vitellius*. *Alis fulvis, anticis maculâ mediâ marginæque posticis limbo fuscis.*

He. *Vitellius*. *Fabricius*.—Pam. *Vitellius*. *Steph. Catal.*

Size of *He. Comma*: anterior wings fulvous, with a spot in the middle, and the hinder margin black: posterior fulvous, with the entire margin black; beneath all the wings fulvous immaculate.

In page 334 of the 1st vol. of the Entomological Transactions, this is given as an English species, in the following terms: “Has been caught in Bedfordshire by the Rev. Dr. Abbott.”—*Mr. Haworth*: but I believe the insect in question to be a native of North America alone. See upon this subject the observations appended to the preceding species.

but greener, and the spots more distinct and whiter, more or less edged with black, and emarginate externally.

Var.  $\beta$ . The wings above of a pale greenish ochraceous; the maculations as usual.

The peculiar character possessed by the male of this species, and which is mentioned by Ochsenheimer, but by no English writer, admirably identifies it with the Pa. Comma of Linné, who, in his description of the anterior wings, says, "*Litura nigra linearis margine nudâ subargenteâ in medio pagine superioris.*"

Caterpillar dirty green with a dorsal and lateral row of black dots, mixed with red: head black, with a white collar:—it feeds on the *Coronilla varia*, according to the authors of the *Weiner Verzeichnis*.

A local species occurring in plenty on Riddlesdown near Croydon, and on the chalky downs of Sussex, especially near Lewes. It used formerly to be taken on Hanwell-common, Middlesex, but I have not heard of any recent captures near that place: it appears towards the end of August. "Discovered in considerable abundance towards the middle of August, 1825, on the Devil's Ditch, between the running gap and the turnpike; the specimens remarkably large and fine."—*Rev. L. Jenyns*. "Old Sarum, Wilts, July, 1826."—*J. C. Dale, Esq.*

The second division of the Lepidoptera consists of the

#### CREPUSCULARIA, *Latreille* :

Which are characterised by having the *antennæ* various, but gradually produced into a prismatic or fusiform club, with the apex frequently terminating in a fascicle of hairs: *wings*, when at rest, horizontal or a little inclined; the posterior with a rigid setiform process at the base, passing through a hook beneath and retaining the anterior; they are frequently transparent; the anterior larger than the posterior, and generally much elongated: *body* cylindrical or conical, sometimes furnished with a large tuft of scales or hair at the apex. The larvæ have sixteen legs, six pectoral, eight abdominal, and two anal; the last segment is frequently armed with a horny process; and the pupæ are smooth, sometimes furnished with spines, either buried in the earth or folliculated. The perfect insects of the typical family generally fly in the evening or at day-break, the others in the morning and afternoon, and live for a short period only.

This division corresponds with the genus *Sphinx* of Linné and his followers; but it may be readily and most advantageously separated into the following families by the subjoined characters :

<i>Palpi</i> {	{ breves: <i>Abdomen</i>	{	ano imberbi: . . .	2. SPHINGIDÆ.
			ano barbato: . . .	3. SESIIDÆ.
			sæpissimè hyalinæ: . . .	4. ÆGERIIDÆ.
			squamis tectæ: . . .	1. ZYGÆNIDÆ.



FAMILY I.—ZYGÆNIDÆ, *Leach.*

*Antennæ* fusiform, sometimes bipectinated, without a fascicle of scales at the apex: *head* smooth: *palpi* short or elongate, clothed with long scales or porrected hair, the terminal joint elongated: *abdomen* cylindric, with a slight tuft at the apex: *wings* in the indigenous species covered with scales, deflexed during repose. *Larva* exposed, fusiform, slightly villose, not tailed, legs minute: *pupa* folliculated: posterior *tibiæ* with short spurs.

The insects of this family are of a gregarious nature, and, unlike the Sphingidæ, they fly chiefly by day; their flight is very heavy and slow: their caterpillars subsist upon the leaves of divers plants, and they form a silken web in which they change to pupæ; some of them are hatched in the autumn, and remain concealed during the winter, coming out on the approach of spring, and undergoing their final metamorphosis in May or June.

*Antennæ* { bipectinatæ aut simplices, haud curvatæ: . . . . . 21. INO.  
 { abruptè flexuoso-clavatæ: . . . . . 22. ANTHROCERA.

GENUS XXI.—INO, *Leach.*

*Antennæ* gradually thickening from the base to near the apex, straight, bipectinated, or simple, with the interior edge subserrated; *palpi* short, not reaching beyond the clypeus, densely clothed with scales: *head*, *thorax*, *abdomen*, and *femora* thickly covered with scales, rather elongate on the former. *Larva* scaly, depressed, head small: *pupa* with long wing-cases.

The genus Ino was established by Fabricius by the name Proeris, but that having been preoccupied, Dr. Leach changed its appellation to the one it now bears; the species are known from the Anthrocerae by the form of the antennæ, which are not curved, but nearly straight, and become gradually thicker as they approach the tip, which is again slightly attenuated; the males have this part bipectinated, and the females simple, but serrated beneath; the species (of which there are several on the continent) are all of rich tints of light green, blue, or brownish, and immaculate.

Sp. 1. *Statices*. *Alis anticis viridi-cæruleis subtis fuscis, posticis fuscis, antennis pectinatis, apice subclavatis.* (Exp. alar. 1 unc.—1 unc. † lin.)

Sp. *Statices*. *Linné*.—*Don*. vi. pl. 204. f. 2.—Ino *Statices*. *Steph. Catal.*

Anterior wings, thorax, and abdomen of a rich glossy silken blue-green; the former beneath and posterior wings on both sides brown: all the wings, especially the posterior, somewhat transparent: cilia greenish or brown.

Var.  $\beta$ . With the abdomen, and sometimes the thorax, of a brilliant rufous-copper, with a silken gloss.

The colour of the anterior wings varies greatly, being occasionally found of a pale yellowish green, or of a rich blue and slightly tinted with green.

Caterpillar dusky, with two dorsal lines of whitish crescents;—it feeds on the common sorrel (*Rumex acetosa*). The chrysalis is dusky.

Not very abundant, but local, in woods and meadows: I have taken it occasionally at Coombe and Darenth woods, near Hertford, Ripley, on Epping-forest, and at Colney Hatch, about the middle of June; it flies heavily. “Abundant in Kensington-gardens.”—*Mr. Waterhouse*. “Near Ely.”—*Rev. L. Jenyns*. “In great plenty near York, but very local, and confined to one meadow.”—*W. C. Hewitson, Esq.* “Near Newcastle.”—*G. Wailes, Esq.* “Common in Littleton-copse, Kimpton.”—*Rev. G. T. Rudd*.

### GENUS XXII.—ANTHROCERA, *Scopoli*.

*Antennæ* slender at the base, thickening into an abrupt bent fusiform club, with the apex simple; in the males robust: *palpi* reaching beyond the clypeus, cylindrical-conic, acuminate, densely clothed with hair: *head, thorax, and abdomen* thickly clothed with short silken hairs, with a few scales intermixed. *Larva* villose, fusiform, generally spotted with black, on a pale ground; *head* small: *pupa* elongate.

*Zygæna* having been employed by the ancients to designate a fish\*, the Hammer-headed Shark, that name is, consequently, improper to be used for a genus of insects: I have therefore reverted to the one applied by Scopoli, to prevent the inevitable confusion which must arise if different classes of beings are called by similar names. The species of Anthrocera are all extremely beautiful, and

† Sp. 2. Globulariæ. *Alis anticis cæruleo-viridibus, posticis fuscis, antennis omnino pectinatis, apice cuspidatis.* (Exp. alar. 1 unc. 4 lin.)

Zy. Globulariæ. *Hübner*.—Ino Globulariæ. *Steph. Catal.*

The anterior wings of a blue-green, the posterior brown: the antennæ pectinated, with the apex simple.

A variety of the foregoing insect having been considered as the *Zy. globulariæ* of Hübner, as such I recorded it, but having subsequently examined the specimen, I find that it is referable to *Ino Statices*, var.  $\beta$ . *Ino Globulariæ* must therefore be removed from the list; but I conceive that it is extremely probable for it to occur in England.

\* *Dascillus*, *Liparis*, *Phycis*, *Colocasia*, *Staphylinus*, &c., have all been improperly applied to genera in entomology, and should be discarded.

the indigenous ones are characterized by their anterior wings being brilliant green or bluish-green, more or less spotted with red, and their posterior wings of the latter colour, with a dusky or bluish border. They are gregarious, and inhabit fields and meadows, and may be known from the species of the preceding genus by their elongate simple antennæ, which have a curved fusiform club, terminating in an acute point. Owing to their uniformity of appearance, they have been much neglected in this country; but there are evidently several species which I have attempted to discriminate, but unfortunately I am unable to give so complete an account of the history of all as I wish, from my former ignorance of their distinctness; and I conceive that it would be a dereliction from those principles which have hitherto guided me, were I to pass them over in silence as mere varieties, their distinctions not resting upon the authority of one, but of several specimens, which generally vary considerably amongst each other, each, however, retaining its proper character.

Sp. 1. *Meliloti*. *Alis anticis nigro-virescentibus, aut virescenti-cyanicis, subdiaphanis, maculis quinque rubris; posticis rubris margine tenui nigro-virescente.*  
(Exp. alar. 1 unc. 3—4 lin.)

Zy. *Meliloti*. *Ochsenheimer*.—An. *Meliloti*. *Steph. Catal.*

Distinguished from the other indigenous species by the transparency, elongation, and slenderness of its wings, and their markings: the anterior are of a deep-greenish or greenish-blue, with a large obscurely duplex red spot at the base, two others placed rather obliquely on the disc, frequently united, and a fifth towards the apex near the costa: the inferior are red, with a very slender dusky-greenish margin.

Var.  $\beta$ . With all the red spots on the anterior wings united into an irregular longitudinal streak.

The antennæ are much shorter and more slender in this than in either of the following insects.

Caterpillar (according to Esper) greenish, with the head and anterior legs black, the rest green: a whitish stripe on the back, and a row of black spots on the sides: it feeds on Trefoil (*Trifolium*). The chrysalis is yellowish-white, with dusky back and wing-cases.—Albin seems to have figured the larva of this insect as that of An. *Filipendulæ*.

I was fortunate enough to meet with this species in great plenty the latter end of June, 1826, in West Horsley-park, Surry: it has not been noticed as a native of Britain; and were it not from the circumstance of my possessing an extensive series of specimens, taken in the above locality, all agreeing in material points with

each other, I might yet have passed it over, as I have hitherto the only specimen which was placed in my cabinet, as a mere wasted variety of the following insect. In Mr. Vigners' collection is also a specimen taken in a different locality.

Sp. 3. Trifolii. *Alis anticis cyaneis maculis quinque rubris, duabus mediis sæpè coadunatis, subtùs concoloribus; posticis rubris, margine latiori cyaneo.* (Exp. alar. 11 lin.—1 unc. 2—3 lin.)

Sp. Trifolii. *Esper.*—An. Trifolii. *Steph. Catal.*

Anterior wings deep greenish-blue, with two distinct red spots at the base, two others placed obliquely on the disc, the anterior smallest, and a single round one towards the apex, near the costa: posterior wings deep red, with a very broad, slightly waved deep bluish-black marginal fascia.

Var.  $\beta$ . With the two oblique discoidal spots on the anterior wings confluent.

Var.  $\gamma$ . As in var.  $\beta$ , but the discoidal spots united by a narrow line with the one at the apex.

Var.  $\delta$ . The basal and discoidal spots confluent, and united by a streak of red.

Var.  $\epsilon$ . All the spots longitudinally confluent, forming a broad irregular flame-like blotch.

Caterpillar dusky-yellow, with four rows of black spots; two on the back, and two on each side: it feeds on Trefoil. Chrysalis black.

Found abundantly in several parts of the country, towards the end of May, or beginning of June, particularly in Devonshire, and near Brockenhurst, in the New-forest; also in a field near Highgate, and at Colucey-hatch: it has generally been considered, by English collectors, as the *Zy. Loti* of Fabricius, but that insect is considerably larger, and is subsequently noticed. “Horningsea-fen, near Cambridge.”—*Professor Henslow*. “Common near Newcastle.”—*G. Wailes, Esq.*: this information furnished on the knowledge of one five-spotted species alone; it is, therefore, doubtful to which it strictly applies, as I have not seen a northern specimen.

† Sp. 2. Scabiosæ. *Alis anticis viridibus, maculis oblongis approximatis sanguineis, posticis rubris.* (Exp. alar. 1 unc. 5 lin.)

*Zy. scabiose.*—*Fabricius.*—*Haworth, 74.*—An. Scabiosæ. *Steph. Catal.*

Anterior wings dusky-green, with three elongate narrow red streaks, two at the base, and one towards the apex; posterior red, the margin dusky-blue: antennæ slender, but slightly clavate, bluish-black: body dark-coloured.

Said by Mr. Haworth to have been taken near London by Captain Lindegren: I have not seen an indigenous specimen, and as var.  $\epsilon$  of An. Trifolii has been usually referred in this country to the *Zy. Scabiosæ* of Fabricius, I suspect the insect mentioned by Mr. Haworth may have been merely a variety of that species.

Sp. 4. Loti. *Alis anticis nigro-cyaneis maculis quinque rubris, subtus concoloribus, posticis rubris, limbo lato sinuato nigro-cyaneo.* (Exp. alar. 1 unc. 4—6 lin.)

Zy. Loti. *Fabricius*.—*Don*. ix. pl. 319?—*An. Loti. Steph. Catal.*

Considerably larger than the foregoing, which it greatly resembles: the anterior wings are deep blue, with five large red spots, two at the base, two placed obliquely on the disc, and one at the apex towards the costa: the posterior wings are deep red, with a broad waved black-blue margin.

Var.  $\beta$ . With the basal and discoidal spots united.

Var.  $\gamma$ . With the discoidal and apical spots confluent.

The superior size of this species, and the comparatively narrow margin to the posterior wings, distinguish it from *An. Trifolii*.

Caterpillar pale green, with a row of black spots on the back, and one on each side, the latter (in the females) with a bright yellow streak beneath: it feeds on various kinds of Trefoil (*Trifolium*). The chrysalis is yellowish, with black wing-sheaths.

Of this insect I have three specimens only, all different, one of which I found in June, in a field near Eltham, Kent, several years ago, and the others were captured near London; but their locality is unknown to me, though, as I obtained them from dealers who principally collect in the above county, it is probable they were taken in the same place with the other specimen.

Sp. 5. Hippocrepidis. *Alis anticis nigro-cyaneis, maculis sex rubris, subtus omninò confluentibus, posticis rubris margine sinuato viridi-cyaneo, abdomine immaculato.* (Exp. alar. 1 unc. 1—7 lin.)

Zy. Hippocrepidis. *Oechsenheimer*.—*An. Hippocrepidis. Steph. Catal.*

This varies in size like *An. Filipendulæ*, which it greatly resembles; but the border of the posterior wings is considerably more distinct than in that insect, and undulated internally: the sixth spot on the anterior wings (the one towards the anal angle) is generally small, with a coloured nervure passing through it; the under surface of the anterior wings with the disc entirely red, and the maculations not defined. Above, the anterior wings are blue-black, with six red spots, disposed as in *An. Filipendulæ*, and the posterior red, with an undulated greenish-blue margin: the abdomen immaculate.

Var.  $\beta$ . The anterior wings above of a pale yellowish-green, with six pale lemon-yellow spots: the posterior wings of the latter colour, with a bluish-green border. Like *An. Filipendulæ* this varies considerably from the spots being more or less confluent, or obliterated.

Caterpillar greenish, with a broad yellowish stripe on each side, and a row of black spots: the head black varied with white, the anterior legs brown, the following yellow, the rest black: it feeds on the Wild Liquorice (*Astragalus glycyphyllos*). The chrysalis is dusky-brown, with the abdomen greenish spotted with black.

I have captured this insect in the vicinity of London; first in a field near Coombe-wood, on the 20th June, 1810, and subsequently near Darent-wood: of var.  $\beta$ , I have seen three specimens only, which were reared from larvæ taken in the latter habitat, where the Wild Liquorice abounds.

Sp. 6. *Filipendulæ*. *Alis anticis viridi-cyaneis fusco-ciliatis, maculis sex rubris, posticis rubris margine tenuè nigro, abdomine atro immaculato.* (Exp. alar. 1 unc.—1 unc. 6—7 lin.)

Sp. *Filipendulæ*. *Linné*.—*Don*. 1 pl. 6.—An. *Filipendulæ*. *Steph. Catal.*

Anterior wings of a green-blue, with six red spots: two at the base, two placed obliquely across the disc, and two nearly parallel with the last, at the apex; underside similar: posterior deep red, with a very narrow blue-black marginal band: cilia of all the wings brownish glossed with green.

Var.  $\beta$ . With the two discoidal spots of the anterior wings united.

Var.  $\gamma$ . The two apical spots alone united.

Var.  $\delta$ . The same as var.  $\beta$ , and with the two apical spots also united, forming two oblique red bars.

Var.  $\epsilon$ . The four basal spots united longitudinally by a narrow red streak.

Var.  $\zeta$ . All the spots united into a narrow flame-like red dash.

Caterpillar yellow, with three rows of larger black spots on the back, and a row of smaller ones on each side: head and anterior legs black, the rest yellow. It feeds on the Plantain (*Plantago*), Trefoil (*Trifolium*), Dandelion (*Leontodon Taraxacum*), Mouse-ear Hawkweed (*Hieracium Pilosellæ*), Quake grass (*Briza minor*), &c. The chrysalis is yellow, with the head, wing-sheaths, and tip black.

An insect of general occurrence, being found equally abundant in the North, in Devonshire, South Wales, &c. as in the metropolitan district: its time of appearance is towards the end of June, or the beginning of July, and it affects fields and meadows by the sides of woods.

## FAMILY II.—SPHINGIDÆ, *Leach*.

*Antennæ* prismatic, sometimes serrated towards the middle, ciliated slightly in the males, terminated by a scaly seta, or naked filiform appendage: *palpi* short, three-jointed, densely clothed with hair or scales, the terminal joint minute: *abdomen* conical, not tufted at the apex. *Larvæ* exposed, cylindrical or attenuated anteriorly, with a horn on the last segment, naked, sometimes granulated, the sides frequently with oblique or longitudinal stripes: *pupa* subterranean, or subfolliculated.

This family embraces some of the largest of the European Lepidoptera, which are no less distinguished by their immense bulk than by the beauty and agrecableness of their colours, which, although

usually of sombre tints, are nevertheless exceedingly gay in several of the species. They fly with great rapidity (whence they have obtained the name of Hawk-moths) towards sunset, and early in the morning, when they may be observed hovering over flowers, without settling upon them, and extracting their nectareous juices by means of their long spiral tongue. Their larvæ are very conspicuous, and generally while at rest they assume the attitude of the Sphinx, whence their name: they mostly change into a pupa beneath the ground, and it is not unusual for several of one brood to remain two, three, or more seasons, before they effect their final metamorphosis—a wise provision of nature to prevent their destruction, which the great size and conspicuity of the larvæ tend to promote: in ordinary cases, however, the larvæ retire under-ground, or form a loose cocoon among dead leaves on the surface, in the autumn, and undergo their change, and the imago is produced in the beginning of summer; the enormous larvæ of *Acherontia Atropos* forming an exception, as they generally change to pupæ in August, and the insect bursts forth in the following October: and in fine seasons other species will have two broods, as hereafter mentioned.

The indigenous genera may be thus distinguished:

<i>Alæ</i>	{	plus minusve angulatæ: . . . . .	23. SMERINTHUS.		
		{	breves: . . . . .	24. ACHERONTIA.	
			{	longatæ; <i>Antennæ</i> : . . . . .	25. SPHINX.
				clavatæ: . . . . .	
		clavatæ: . . . . .	26. DEILEPHILA.		

### GENUS XXIII.—SMERINTHUS, *Latrèille*.

*Antennæ* gradually incrassated, serrated, especially in the males, somewhat prismatic; the apex generally incurved and attenuated: *palpi* contiguous: *maxillæ* very short: *head* small: *anterior wings* more or less angulated or dentated. *Larva* very much granulated, head conical, last segment with a conical recurved horn: *pupa* slightly rugose, acute, and pointed at the apex, subterranean.

The genus *Smerinthus* differs from the rest of this family by the amazing brevity of the maxillæ, and by the angulated or notched wings; unlike the other Sphingidæ, they settle upon flowers, and take their food in that position, owing to the shortness of their proboscis; they exist but a very short period, and scarcely fly: their flight is very awkward, and they are very dull and heavy insects. Their larvæ subsist upon the leaves of trees, not upon low herbage, and during repose the posterior wings are generally produced

beyond the costa of the anterior, as in many of the Bombycidæ: the serrated antennæ of the males also serves to distinguish that sex with facility from the other genera.

Sp. 1. Ocellatus. *Alis subangulatis, anticis rubicundo, brunneo fuscoque variegatis, posticis roscis, ocello cæruleo.* (Exp. alar. ♂ 2 unc. 9 lin.—3 unc. ♀. 3 unc. 6—8 lin.)

Sph. Ocellata. *Linné.—Don. viii. pl. 269.—Sm. Ocellatus. Steph. Catal.*

Anterior wings angulated, of a rosy-ash, with a clouded, oblique, central, interrupted band, several undulated strigæ, and the hinder margin irregularly brown; a central discoidal pale sublunate transverse streak; and midway between it and the hinder margin a blackish-brown spot, and frequently two or three similar maculations at the anal angle; posterior wings rosy at the base, the anterior edge cinereous, with paler clouds, and the posterior rosy-griseous; towards the anal angle is a large ocellus, having the pupil of great size, of a bluish-brown, the iris blue, and an outer circle of black, the latter colour often reaching to the anal angle, which is generally dusky: fringe of all the wings brown, edged with white near the anal angle of the posterior, which have a slight emargination: head and thorax pale cinereous, the latter with a deep brown patch; abdomen dark immaculate cinereous.

Caterpillar very rugose, of a beautiful green, with oblique white lateral stripes, and whitish ocellated spots, the anterior legs and stigmata rosy:—it feeds on the various species of willow (*Salix*), poplar (*Populus*), apple (*Pyrus Malus*), and sloe (*Prunus spinosa*), and appears in the autumn, changing in September to a brown pupa with a black back.

The imago is produced towards the end of May, and is found in tolerable plenty in several places near London, especially on Epping Forest, near Wanstead, where there is a profusion of aspen trees, and in the marshes about Limehouse, Bow, and Stratford; also in Battersea Fields; at Hertford, Ripley, &c. “Not uncommon near Spitchweek, Exeter, and near Ashburton, Devon.”—*Dr. Leach.* “In great abundance near York.”—*W. C. Hewitson, Esq.*—“Near Carlisle.”—*T. C. Heysham, Esq.* “Occasionally met with at Bottisham and Cambridge, but not common.”—*Rev. L. Jenyns.* Harris mentions, in his Aurelian, that he once found a specimen of this species in whose abdomen several specimens of a *Dermestes* had taken up their abode while the insect was yet alive.

Sp. 2. Populi. *Alis dentatis griseis fasciis obscurioribus, anticis puncto medio albo, posticis basi ferrugineis.* (Exp. alar. ♂ 3 unc.—3 unc. 6 lin.: ♀ 3 unc. 6 lin.—4 unc. 4 lin.)

Sph. Populi. *Linné.—Don. viii. pl. 241.—Sm. Populi. Steph. Catal.*

Anterior wings irregularly dentate, the dentations proportionably deeper in the female; griseous, clouded on the hinder margin, and obscurely streaked and



banded with glaucous, with a white lunule, and frequently a broad transverse cinereous fascia in the middle: the posterior wings are less dentated, and are also griseous, with deeper obscure waved streaks, a pale central lunule, and a large rust-coloured patch at the base: the fringe is cinereous, clouded with griseous: the thorax and abdomen pale unspotted cinereous.

This insect varies much in size and colour; the male is usually darker than the female, but I have several very pale specimens, with deep cinereous strigæ, and of the female I have one of immense bulk, and of a deep cinereous: others of this latter sex are very pale.

One of my specimens is very remarkable: the right side (antennæ, legs, wings, &c.) being that of the male, and the left that of the female: it was reared from the larva last June, and the individual who presented me with the specimen (Mr. Weaver) also bred a similar one the preceding year.

The caterpillar also varies much; it is very rugose, and is usually green, with a yellowish line on each side of the anterior segments, and an oblique transverse stripe of a similar colour on the rest, the last terminating on the tail; the stigmata are rosy; and frequently each segment bears a large red spot, and the lateral lines are of a more brilliant cast: it feeds chiefly upon the poplar, but also eats willows and aspen; is full grown towards the end of September, and changes beneath the earth to a dull brown pupa.

The perfect insect appears towards the end of June, and is very common in the south of England; a larva which was brought to me in July last, at Ripley, underwent all its changes, and arrived at maturity at the beginning of September. “In plenty in Devonshire.”—*Dr. Leach*. “Near Carlisle.”—*T. C. Hvysham, Esq.* “In Northumberland.”—*W. C. Hewitson, Esq.* “Very abundant in the neighbourhood of Ely.”—*Rev. L. Jenyns*.

Sp. 3. *Tiliæ*. *Alis anticis virescenti nebulosis, fasciâ fractâ mediâ fimbriqve saturatoribus, posticis griseis, fasciâ obscurâ fuscescente.* (Exp. alar. ♂ 2 unc. 2—8 lin.: ♀ 2 unc. 4 lin.—3 unc.)

Sph. *Tiliæ*. *Linné*.—*Don*. x. pl. 325.—*Sm. Tiliæ*. *Steph. Catal.*

Anterior wings somewhat trilobate, griseous, clouded with greenish, or rosy-griseous, sometimes ferruginous, especially in the female, with an interrupted transverse central oblique band, composed of two large subquadrate olive-brown spots, a broad marginal band of greenish on the hinder margin, and a white or whitish patch at the tip of the costa: the posterior wings griseous, with an obscure brownish band, placed obliquely, and terminating in dusky at the anal angle, which is slightly emarginate: thorax whitish, with three olivaceous bands united in front: abdomen cinereous or greenish.

Var. *β*. Of a deep rusty griseous, with the subinterrupted fascia and tips of the anterior wings of a livid hue.

Var. *γ*. Anterior wings with a small round central dot, in lieu of the fascia.

Var. *δ*. Anterior wings with the central fascia unbroken.

Some specimens have a dot on one wing and a fascia on the other: in colour they vary greatly.

Caterpillar variable, rugose: slender anteriorly, green or brown with oblique red or yellow streaks on its sides: it feeds on the lime (*Tilia europæa*), elm (*Ulmus campestris*), alder (*Betula Alnus*), birch (*Betula alba*), and oak (*Quercus Robur*). The pupa is dirty brown.

Not a very abundant species; occurring, however, tolerably frequent near Hertford, Fulham, Richmond, Coombe-wood, on Epping-forest, &c. It usually makes its appearance towards the end of May; but I once took a remarkably fine specimen on the 19th July, and last August I bred one that was taken in the larva state in July previous near Ripley. "Near Exeter, Ashburton, and Spithweek, Devon."—*Dr. Leach*. "Plentiful at Bottisham."—*Rev. L. Jenyns*. "Once near York."—*W. C. Hewitson, Esq.* "Kimpton in May last."—*Rev. G. T. Rudd*.

#### GENUS XXIV.—ACHERONTIA, *Ochsenheimer*.

*Antennæ* short, very gradually and slightly thickened from the base nearly to the apex, uncinated, the hook terminating in a long hairy seta: *palpi* not contiguous, applied close to the head, naked inwardly, densely clothed with hair outwardly: *maxilla* very short, robust: *head* large: *wings* entire, the posterior slightly emarginated: *cilia* very short: *body* obtuse, densely clothed with short velvety pile. *Caterpillar* naked, with oblique lateral stripes, the anal horn tuberculated, deflexed, curved at the tip: *pupa* smooth, subterraneous.

*Acherontia* has very short robust maxillæ, but nevertheless considerably longer than those of the preceding genus, from which it is instantly known by the integrity of its wings; from *Sphinx* and *Deilephila* the former character separates it, as well as the superior robustness of its body—which is densely clothed with a velvety pile—and the brevity and stoutness of its antennæ. The larva also differs considerably from that of the other genera, especially in the caudal appendage.

Sp 1. *Atropos*. *Alis anticis fuscis, nigro luteoque variis, puncto centrali albido, posticis luteis, fuscis duabus nigris, abdomine luteo cingulis lineâque dorsali atris.* (Exp. alar. ♂ 4 unc. 4—8 lin.: ♀ 4 unc. 10 lin.—5 unc. 1 lin.)

Sp. *Atropos*. *Linnaë*.—*Ac. Atropos*. *Curtis*, iv. pl. 147.—*Steph. Catal.*

This magnificent insect is unquestionably the largest of the European Lepidoptera: its anterior wings are brown, varied with black and luteous, with some ferruginous dashes towards the tip, and a central whitish spot; they are thickly irrorated throughout with whitish: the posterior wings are luteous, with two black, or deep brown, bands, the outer one broadest, and emarginate

on both sides: head black: thorax bluish-black, with a large central yellow or whitish patch, rounded anteriorly and expanded posteriorly, having two small deep black spots, and two larger, of the colour of the thorax, behind: abdomen luteous, with the margins of the segments black, and with an interrupted dorsal line, and the greater portion of the terminal segment bluish: antennæ black with a white tip.

Caterpillar in its first state dirty red, finally yellow, with the back granulated and speckled with black; the transverse lateral lines united on the back, anteriorly blue, posteriorly white, with a purple dash in the centre of each on the sides: it feeds on the potato (*Solanum tuberosum*), jasmine (*Jasminum officinale*), thornapple (*Datura Stramonium*), spindle tree (*Euonymus europæus*), hemp (*Cannabis sativa*), elder (*Sambucus nigra*), woody nightshade (*Solanum Dulcamara*), &c.; the former is, however, their favourite pabulum. The pupa is bright red-brown.

Notwithstanding the immense size of the larva, which is sometimes four or five inches in length, and of the thickness of a man's finger, they are not very frequently observed, from the circumstance of their not venturing out during the day-time, unless when seeking for a convenient spot to undergo their change, their usual time for feeding being in the evening: they have, however, occasionally been met with in considerable plenty, and the public journals, for the year 1826 especially, abounded with almost miraculous accounts of the immense bulk both of the larva and imago, and of their appearance in all parts of the kingdom, especially on all the coasts. The unsuccessful attempts formerly made by persons to rear them to the perfect state has induced many to suppose that there was great difficulty attendant thereon; but of late years the insect has been reared in tolerable plenty by several individuals, and a fair proportion of the imago has been produced; the larvae are usually full grown about the middle of August, when they retire under ground and form an oval cell, in which they change to the pupa. Towards the end of September or the beginning of October the imago is produced, and, like the rest of the group, flies morning and evening only. The conspicuous patch on the back of its thorax, which has considerable resemblance to a cranium, or Death's head, combined with the feeble cry of the insect, which closely resembles the noise caused by the creaking of a cork, more than the plaintive squeaking of a mouse, has caused the insect to be looked upon by superstitious persons as the "harbinger of death, disease, and famine," and their sudden appearance in Bretagne, as we are informed by Latrille, during a season while the inhabitants were

suffering from an epidemic disease, tended to confirm the notions of the superstitious in that district, and the disease was attributed by them entirely to the visitations of these hapless insects!

Considerable diversity of opinion prevails amongst naturalists respecting the organ which enables the insect to make the noise above alluded to; and common as the insect is, the point remains undecided. Reaumur and Roësel attribute it to the friction of its maxillæ against its palpi, an opinion which has been followed by many, and apparently with justice, as the structure of the latter organs seems calculated for the purpose; but Engramelle informs us that M. de Johet plucked out the maxillæ and cut off the palpi of one of these insects, and yet the noise was produced when the wings were agitated; he, consequently, imagined that the instrument causing the noise was connected with these latter appendages; and, upon an examination of them, he detected two concave scales (the petagiæ? common to all Lepidoptera) at their base, which he infers were the objects in question; for by depriving a second specimen thereof, the insect became mute: according to M. de Johet, therefore, the noise is occasioned by the air being suddenly propelled against these scales by the action of the wings. Again, M. Lorrey states that it arises from the air escaping rapidly from peculiar cavities communicating with the spiracles, and furnished with a fine tuft of hairs on the sides of the abdomen. In the number of the *Annales des Sciences Naturelles*, &c. for March last, is a note by M. Duponchel, relative to the observations of M. Passerini on this subject. After alluding to the opinions of MM. Reaumur, Roësel, and Lorrey, M. Duponchel tells us, that he (M. P.) controverts them, by stating that the noise is produced from the interior of the head, in which is a cavity in communication with the trunk or maxillæ, and between which are placed the requisite muscles for its elevation and depression: he also notes, that having cut off the abdomen the noise continued, as was also the case when the tongue was extirpated; and although it ceased when the muscles above-mentioned were paralyzed, it was reproduced upon passing a strong pin sharply and vertically into the head. He further remarks, with reference to the opinion of M. Lorrey, that although both sexes utter the cry in question, one of them alone is furnished with the apparatus mentioned by him, an apparatus likewise found in other *Crepuscularia*, especially *Macroglossa*, which are mute. M. Duponchel also observes that a membrane exists betwixt the eyes, which does

not seem likely to be connected with the point in question, inasmuch as it is likewise found in *Sphinx Convoluti*; and, in conclusion, he acquaints us, that M. Passerini invites the attention of naturalists to the subject, as it is his intention to furnish them with the result of his observations, accompanied by dissections.

I regret being unable to reconcile these various opinions, from never having been fortunate enough to possess a living specimen of the insect, although I once had an opportunity of hearing the noise, through the kindness of Mr. Raddon.

Another remarkable property imputed to this insect is its propensity to rob the honey-bee of its mellifluous stores, a fact that has been noted by Kuhn, Hüber, and others, and which has obtained for it the name of the Bee-tiger Moth.

Upon its entrance into life this singular insect also offers a peculiarity; the wings and members, upon its disengagement from the pupa, being enveloped in a fine thin membrane, which, rapidly drying and opening, liberates the captive prisoner, and its wings become speedily enlarged, and the insect capable of performing all the functions for which it is called into existence.

Although of unusual occurrence generally, this species cannot be esteemed scarce, as it is found annually in some parts of the country, and in certain seasons, as above-mentioned, it abounds; but unless diligently sought after in the larva state is not easily detected. In the potato-fields, near Ham, in Essex, nearly a bushel of pupæ were obtained in the course of a few weeks, by a gentleman, from the labourers some years since; and two years ago Mr. Raddon procured a considerable number of larvæ from the neighbourhood of Twickenham. In the same season many were taken in Devonshire by Captain Blomer, who kindly supplied me with specimens; others were found near Hastings, Brighton, Worcester, Birmingham, &c. and many of the imago in the autumn: the latter has frequently been observed at sea. I have heard of a specimen having flown into a vessel when sailing midway between the Glamorgan and Devonshire coasts, and of several having been taken three or four miles from land; this circumstance has induced some persons to imagine that the insect was not truly indigenous, but its simultaneous appearance in different parts of the country satisfactorily confutes that theory.

“In the summer of 1825 the larva was frequently taken near Carlisle.”—*T. C. Hcysham, Esq.* “In profusion near York, as well

as the imago, in the autumn; since which it has been very scarce: also taken in Northumberland and Scotland.”—*W. C. Hewitson, Esq.* “Once near Bottisham in the winged state, and occasionally in the larva state, near Cambridge.”—*Rev. L. Jenyns.* “Not uncommon in Durham; once taken four miles at sea; a second buzzing about a bee-hive.”—*Mr. J. O. Backhouse.*

#### GENUS XXV.—SPHINX *Auctorum.*

*Antennæ* rather elongate, gradually, but slightly increasing in thickness from the base nearly to the apex, especially in the females; the apex attenuated, uncinated, and terminated by a scaly seta: *palpi* contiguous at their apex, densely clothed with hair: *maxillæ* very long: *head* large, subtrigonate: *wings* entire: *body* thickly clothed with hair. Caterpillar smooth generally, with oblique lateral stripes, the horn smooth, incurved: *pupa* smooth, the sheath of the maxillæ always prominent, and detached.

Sphinx differs from Acherontia by the superior length of its maxillæ and antennæ, and by the comparative slenderness of its body and wings; the species are usually of great bulk, and have the abdomen generally fasciated with brilliant colours, while the wings are of sombre hues of brown and black, varied with cinereous or white, and sometimes tinted with rosy: from Deilephila they may be known by the same characters, and by the scaly setaceous apex of their antennæ.

Sp. 1. Carolina. *Alis fusco cinereoque variis, posticis fuscis 3—4 fuscis, exterioribus argutè dentatis, abdomine maculis luteis decem aut duodecim.* (Exp. alar. unc. 4—8 lin.)

Sp. Carolina. *Linné.*—*Curtis, v. pl. 197.*—*Steph. Catal.*

Anterior wings brown, varied with cinereous, with several dark brown zigzag and undulated strigæ, and a whitish one towards the hinder margin; in the centre of the disc, towards the costa, is a white spot edged with black: the posterior wings are pale fuscous, with three or four darker bands, the outer one strongly dentated, and the space between it and the margin sometimes of a deep brown: cilia of all the wings brown, spotted with whitish: thorax yellowish brown, transversely strigated with black anteriorly, with a black spot on each side behind: abdomen brown, with five or six orange spots edged with dark brown on each side, the spots diminishing to the apex.

Caterpillar, according to Abbot, green, with white lateral stripes and a pink tail: it feeds on potato, tobacco, &c. Although this fine insect has been repeatedly taken in England, it unquestionably cannot be considered as indigenous, and ought to be rigidly excluded from our cabinets, otherwise the most perplexing consequences must inevitably arise, to the total confusion of

Sp. 3. *Convolvuli*. *Alis cinereis, anticis fusco nigroque nebulosis, posticis nigro fasciatis, abdomine cingulis atris rubrisque albo marginatis.* (Exp. alar. ♂ 4 unc. 4—6 lin. ♀ 4 unc. 6—8 lin.)

Sp. *Convolvuli*. *Linnaeus*.—*Don.* vii. pl. 228, 229.—*Steph. Catal.*

Anterior wings cinereous clouded with fuscous and black, with several straight and zigzag streaks of the latter colour, the fringe white, interrupted with brown: posterior wings with four irregular black bands, the basal one short and oblique, the others nearly parallel with each other, and with the hinder margin: the fringe as before: head ash-coloured: thorax deep ash, with obsolete dark lines: behind with an ovate bluish spot, posteriorly edged with black, and a red spot adjoining: abdomen deep cinereous, with about five segments white at the base, then red, and margined with black, giving the appearance of five tricoloured belts, interrupted on the back.

our inquiries into the geographical distribution of insects. If this be admitted, as well might the "noble monarch of the forest," because a captive lioness which had escaped from her prison was retaken on Salisbury Plain.

Of Sp. Carolina a single specimen, called Sp. 5—*maculatus* in Mr. Wilkin's Catalogue, is now in Mr. Vigers' cabinet, and two in that of Mr. Curtis, which were taken in England; and I also possess a pair. Its true locality is North America.

Sp. 2. *Quinquemaculatus*. *Alis cinereo fuscoque nebulosis, posticis fasciis 3—4 fuscis, extimâ integrâ, abdomine maculis luteis decem.* (Exp. alar. 4 unc. 8 lin.)

Sp. *Quinquemaculatus*. *Haworth*.—*Steph. Catal.* Sp. Carolina. *Donovan*, xi. pl. 361.

Anterior wings clouded with cinereous and brown, with several undulated black strigæ, a broader flexuous one on the hinder margin, between which and the margin is a broad pale cinereous fascia, gradually shaded into the brown at the apex of the wing; the margin itself is brown: posterior pale cinereous, with three or four brown fasciæ, of which the outer is broadest and entire, and the inner dentated; the hinder margin is also brown; abdomen pale cinereous, with five orange spots edged with black on each side.

The native place of this insect is also North America, and I believe that it is the second species which feeds on the potato, tobacco, &c. alluded to by Abbot, who, in his remarks upon Sp. Carolina, says, "There is reason to suspect two species of this fly; at least a great variety of colours is observable in both sexes." Four, if not more, specimens have been found in England: the first was taken at Chelsea, and was in Mr. Drury's cabinet, now in the possession of Mr. Donovan; a second in Mr. Haworth's collection, taken near the same place; one in Mr. Atkinson's cabinet, found in the caterpillar state at Leeds, and the fourth in my own; but no doubt all were imported; and the simple fact of Mr. Atkinson's specimen having been reared from the larva is not indicative of the native origin of the species.

The female has the anterior wings less clouded, and the posterior of a deeper colour.

Caterpillar very variable, green spotted with black, or brown, with the back darkest, generally with dark ochraceous yellow oblique lateral stripes; the stigmata sometimes black, at others pink; horn dusky or brown: it feeds on the greater and lesser bindweed (*Convolvuli sepium et arvensis*); changes to a rich shining brown pupa, with a long recurved sheath for its proboscis, about July, and the imago appears about the middle of September.

Sp. *Convolvuli* has hitherto been esteemed a rare insect in Britain, but it occurs in every part of the country, specimens having been captured at Caithness, Dover, Margate, Brighton, Penzance, Kingsbridge, South Wales, Norfolk, and in several of the inland counties; its appearance near London cannot be considered uncommon, and last September several were captured at Walworth, Camberwell, and near Hammersmith; some years since I had a specimen brought to me which was taken on a lamp-post in

Sp. 4. *Druræi*. *Alis cinereo fuscoque nebulosis, anticis lineolis duabus mediis strigisque aliquot nigris, posticis roseis fasciis tribus nigris; abdomine cinereo fasciis lateralibus roseis nigrisque alternis.* (Exp. alar. 3 unc. 11 lin.—4 unc. 4 lin.)

Sph. *Druræi*. *Donovan*, xiv. pl. 469. *Steph. Catal.*

A beautiful insect, at first sight resembling Sp. *Convolvuli* or *Ligustri*: the anterior wings cinereous clouded with brown, with several undulated black strigæ disposed in pairs, an irregular zigzag streak at the apex, and two strong longitudinal lines on the disc, of the same colour: on the disc, between the two black lines and the costa, is a black circle, anterior to which, towards the apex, is an open lunule of the same colour: the posterior wings are bright rosy at the base, gradually shading off to cinereous on the hinder margin; they have three black fascia, the outer one slightly emarginate on each side, and the anterior divided towards the anal angle, where it takes a bend to the margin: the cilia of all the wings brown interrupted with white: thorax cinereous, with one lateral and several anterior black strigæ, and a tuft of the same colour at the base: abdomen with the back cinereous, the sides alternately banded with bright rose colour and black.

Caterpillar feeds on the Spanish potato (*Convolvulus batatas*).

Again, we have a transatlantic species, which has been captured at large no less than four times in England: the first was taken about fifty years since near London, and carried alive to the late Mr. Drury: and in September, 1826, a fine and beautiful specimen was taken in a nursery ground near the Kent Road: Mr. Newman has a third; and I possess a fourth, which were also captured near London, several years since: but doubtless all these were imported. It is the Sp. *Convolvuli* of Smith and Abbot.



Holborn. I have seen many which were found at Richmond and near Teddington; and I possess a remarkably fine example of the pupa, which was taken in the larva state near Fulham. “Three specimens caught near Cambridge, in September, 1827.”—*Rev. L. Jenyns*. “Taken in September, 1821, near Carlisle.”—*T. C. Heysham, Esq.* “Near Darlington and Newcastle.”—*Mr. J. O. Backhouse*. “Near York.”—*W. C. Hewitson, Esq.* “At Fulham.”—*C. J. Thompson, Esq.* “A few specimens have been met with near Newcastle.”—*G. Wailes, Esq.*

Sp. 5. *Ligustri*. *Alis anticis grisescentibus, fusco nigroque tinctis, posticis roseis, fasciis tribus nigris, abdomine rubro-purpureo cingulis nigris, dorso cinereo interruptis*.—(Exp. alar. ♂ 3 unc. 6 lin.—♀ 4 unc. 2—10 lin.)

Sp. *Ligustri*. *Linneé*.—*Don*, viii. pl. 248. *Steph. Catal.*

Anterior wings cinerascens, tinged with rosy, the base pale, with a broad dusky fascia extending longitudinally from the thinner margin nearly to the apex, intersected by several deep black lines, placed obliquely on the disc, and bordered posteriorly with an undulated black and cinereous line, between which and the hinder margin are two other cinereous streaks on a griseous ground: the posterior wings are rosy, with three black faciæ; the basal one pale, short, and placed obliquely, the others deep-coloured, and parallel with the hinder margin: cilia plain griseous, with a rosy tinge: head and sides of the thorax cinereous; disc of the latter black, posteriorly varied with cinereous: abdomen of a purple red, with black rings, interrupted on the back with cinereous, with a black longitudinal dorsal line.

Caterpillar rugose when young, smooth at the last moult, light green; the lateral streaks purple anteriorly, white posteriorly: horn black above, yellow beneath: stigmata orange: a few days previously to its change the latter are obliterated, and the colour of the body becomes of a dirty reddish-green: it feeds upon the privet (*Ligustrum vulgare*), common and Persian lilac (*Syringa vulgaris et persica*), elder (*Sambucus nigra*), ash (*Fraxinus excelsor*), &c.: the pupa is of a glossy red-brown, with the apex slightly bifid; the sheath of the proboscis straight, but prominent.

This beautiful insect is far from uncommon in the south of England. I have taken it plentifully in the larva state in gardens at Hertford and Ripley, and have repeatedly captured the imago at Darent, about the end of June and beginning of July. “Common everywhere in Cambridgeshire.”—*Rev. L. Jenyns*. “Near Carlisle.”—*T. C. Heysham, Esq.* “Rare near York.”—*W. C. Hewitson, Esq.* “At Kimpton.”—*Rev. G. T. Rudd*.

Sp. 6. *Pinastri*. *Alis cinereis, anticis lincolis tribus confertis nigris, abdomine fusco cingulis atris supra albo marginalis, dorso interruptis*.—(Exp. alar. 3 mc. 2—5 lin.)

Sp. Pinastri. *Linnaeus*.—*Don*, ix. pl. 296. *Steph. Catal.*

Wings cinereous, anterior obsoletely undulated with brownish, with three unequal diverging black lines on the disc, and an oblique, slightly bent, dusky one at the apex; posterior immaculate, the base rather paler than the margin; the fringe of all the wings white, clouded with cinereous: sides of the head and thorax white, the former dusky at the top, the collar united to a furcate dash of the same hue passing to the hinder part of the thorax, interior to the white edge: abdomen with a narrow black dorsal line, and the sides with alternate spots of black and white.

Caterpillar in its first skin entirely yellow; the second green, with yellow stripes; third deeper green, with three longitudinal lemon-yellow lines on each side; and finally of a rich green, with a brown dorsal line; the sides with two deep yellow ones: the anterior legs and the first segment of the body are yellow, the latter spotted with black; the horn, which was previously straight, becomes curved and black: it feeds on various species of pine, such as the *Pini Abies*, *sylvestris*, *Strobus*, &c. The chrysalis is gray brown, changing to maroon: the tongue-sheath is short.

Evidently a rare insect in the south, but more frequent in Scotland; one specimen was taken in June, near Colney Hatch Wood, about thirty years ago, and a second in the neighbourhood of Esher; which are the only English specimens that have come to my knowledge. “In Rivelston-wood, near Edinburgh, once taken by myself, and several times by Mr. Wilson of the College.”—*Dr. Leach*.

Sp. 7. plebeia. *Alis griseis, puncto medio albo, abdominis lateribus albis nigro marginatis*.—*Fab.* (Exp. alar. 3 unc. 1 lin.)

Sp. plebeia. *Fabricius*. *Steph. Catal.*

Anterior wings griseous, with several indistinct black lines, and a central white spot; posterior obsoletely fasciated with fuscous upon a lighter ground: the fringe of all white spotted with brown: abdomen above griseous, with a black dorsal line, the sides white margined with black; beneath white, with a row of fuscous dots.

*Dr. Leach* obtained a specimen of this insect (which is now in the British Museum) from *Dr. Lettson's* cabinet, and I procured a second from another old collection, reputed to contain indigenous productions only; but as the species is American, I think it highly probable that both the above were placed in the respective cabinets in lieu of *Sp. Pinastri*, in accordance with the bad practice to which I have so frequently been compelled to allude, and the evil tendency of which I have more particularly pointed out in my observations subjoined to the following species.

† Sp. 8. pœcila. *Alis subacutis, canis, fusco-nebulosis, anticis puncto medio albo, lineolisque aliquot nigris, posticis fuscis fasciâ latâ pallidâ, abdominis lateribus nigro maculatis*. (Exp. alar. 2 unc. 9 lin.)

GENUS XXVI.—DEILEPHILA, *Ochsenheimer*.

*Antennæ* short, gradually but distinctly clubbed, especially in the males, the club attenuated at the apex and uncinated, with a naked subulated appendage

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Sp. *pœcila*. *Steph. Catal.*

Smaller than the foregoing: anterior wings rather acute, hoary, clouded with brown, with several longitudinal and oblique black lines, and a zigzag one of the same colour at the apex, a conspicuous white spot on the disc, near the costa, and towards the hinder margin an undulated hoary streak, margined externally with brown; the cilia white, spotted with brown: posterior wings brown, with a broad pale central band; the cilia pure immaculate white: head and sides of the thorax hoary; disc of the latter brown, changing to hoary posteriorly: abdomen hoary ash, with an obsolete brownish line down the back, and a row of undefined black spots down each side.

Of this apparently nondescript species, a single example, in fine condition, is in Mr. Vigers's cabinet as an indigenous insect; but its authenticity is questionable, from the circumstance of *three species alone* of true Sphinx, Sp. *Convoluti*, *Ligustri*, et *Pinastri*, having been hitherto detected in Europe, and from the following information furnished to me by Mr. Vigers: "This insect and another (Sp. *plebeia*) were placed in Mr. Wilkin's cabinet as Sp. *Pinastri*, accompanied by a memorandum that one of the two was foreign, the other British." Now, as neither of Mr. Vigers's specimens occur in other parts of Europe, and as Sp. *Pinastri* is not in his collection (although included in the printed list of the rarer British species contained in that of Mr. Wilkin), it is not only manifestly impossible from the tenor of the memorandum to ascertain which of the above was actually found in England, but it is obvious that *both* were confounded with Sp. *Pinastri*, thus affording another practical and forcible example of the injury to science which has arisen from the very execrable practice of placing foreign specimens in British cabinets: a practice which, I lament to add, is *still followed* by some collectors of the present day, and which, I repeat, is fraught with the most perplexing and mischievous consequences, being no less detrimental to the progress of knowledge than subversive of those very principles such collectors profess to follow; for if their collections be declared to consist of the productions of a local district, they are evidently not so when they are composed of the produce of other regions, and which is undeniably the case when foreign specimens are placed therein, in lieu of such as are otherwise unattainable from their rarity in the given spot. And the simple facts of the apparent indigenous contents of this genus having been so improperly extended, by the introduction of *exotic* specimens, and the species themselves so glaringly confounded, although composed of the largest and most conspicuous Lepidoptera, imperiously demand the abandonment of the vicious practice *in toto*. But as it is essential to obtain such foreign specimens for the sake of illustration, let them not be

terminating in two slender hairs: *palpi* contiguous above the *maxillæ*, which are rather elongated: *head* moderate subovate: *wings* entire, the posterior slightly produced at the anal angle: *body* very acute, with a small tuft at the apex. *Caterpillar* various; head small; body smooth, with lateral spots, generally of lively colours; the anterior segments incapable of being withdrawn or expanded: or, without lateral spots, colours dull, the anterior portion of the body capable of elongation, and with lateral ocelli: *pupa* smooth, sheath of the *maxillæ* not exerted; changes in a loose leafy cell on the ground; or subterranean.

*Deilephila* at first sight offers many points of resemblance to *Sphinx*; but the species are usually much smaller, the abdomen shorter and more suddenly attenuated, the *maxillæ* abbreviated, and the antennæ more distinctly clavate, and terminating in a naked subulated appendage: they differ amongst each other in the form of their wings, &c.; but those discrepancies are constant with the difference in the structure of the larvæ, and in the habits of the pupa. I shall therefore subdivide them into two sections, corresponding with their diversities of habit and structure: the larvæ of the second division have the power of elongating or contracting the anterior portions of their body; thence called *Elephant Sphinxes*; a term which has been applied to all the species, though improperly.

A. Anterior wings not subfalcate, hinder margin rounded towards the apex: abdomen transversely banded: antennæ distinctly clavate. Larva maculated; anterior segments not retractile: caudal horn rugose: pupa superficially buried.

Sp. 1. *Euphorbiae*. *Alis anticis virescentibus, vittâ latâ lividâ, maculâque disci virescente, posticis nigris, fasciâ margineque exteriori rubris, antennis niveis.* (Exp. alar. ♂ 2 unc. 10 lin.: ♀ 3 unc. 1 lin.)

*Sph. Euphorbiae*. *Linné*.—*De Euphorbiae*. *Curtis*, i. pl. 3.—*Steph. Catal.*

Anterior wings greenish, with a broad, irregular, livid, or rosy longitudinal streak, reaching obliquely from the thinner edge to the apex, and the hinder margin also irregularly bordered with dusky-rosy; the disc with a greenish spot, and the base with a white one; posterior wings rosy-red, with the base and a fascia near the hinder margin black; a spot towards the inner edge, and the cilia white: head and thorax greenish-brown, with a lateral white stripe; the latter

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commingled with the rest of the collection, but placed by themselves, with their proper locality attached, in a distinct receptacle; and thus confusion will be avoided, the cause of science will remain uninjured, the collection itself will become more valuable and classical; and, when "the flow of time" occasions it to fall into other hands, the student will not be perplexed nor led into error should he detect any extraordinary species therein.

with two oblique pale central ones, united anteriorly on the disc with each other, and posteriorly with the lateral stripe: abdomen above greenish-brown; the margins of the segments white on the sides; the two first with deep black spots: antennæ white.

The colour of the wings varies much; in some specimens the rosy tint is remarkably vivid and powerful, in others it is somewhat obscure: the marginal fascia on the posterior wings also varies, it is sometimes entire, at others deeply indented on each side; and occasionally very narrow or very broad.

Caterpillar at first deep black; it afterwards becomes spotted with red; and in its last skin it is black, with slightly elevated whitish points; with the head, a dorsal line, the base of the tail, a large spot upon each segment beneath the stigmata, and the prolegs bright red; each segment has also a large circular cream-coloured spot, and a lesser one near the stigmata; the tip of the horn and the true legs are black: it feeds upon various kinds of spurge (*Euphorbia*). The chrysalis is of a light ochraceous-brown, with the wing-sheaths rather lengthened.

Although this beautiful insect has been known to inhabit England for a very long period, the present race of entomologists are indebted to the exertions of my friend Mr. Raddon for the major portion of the specimens which adorn their cabinets; he having detected the larva in some considerable abundance on the sea spurge, which grows in plenty on the extensive sand-hills in the neighbourhood of Barnstaple, during his residence in that part of the country: they are full-grown about the middle of September, when they retire a little beneath the surface of the sand, and effect their change into the pupa; reappearing in their final state the following year at the beginning of June. “Three caterpillars taken near Coventry in 1827.”—*Mr. Mercer.*

Sp. 2. Galii. PLATE 12. f. 2.—*Alis anticis virescentibus, vittâ longitudinali albâ, posticis nigris fasciâ pallidâ rubro nebulatâ, antennis fasciis apice albis, dorso albo punctato.* (Exp. alar. 2 unc. 10 lin.—3 unc.)

Sp. Galii. *Hübner.*—*De. Galii. Steph. Catal.*

Anterior wings of an olive-brown, with a narrow longitudinal whitish vitta, extending obliquely from the inner base nearly to its apex, its hinder edge slightly waved, the anterior a little irregular; the hinder margin is bordered with ashy-brown, with cilia of the same colour; the base has a white spot with an adjoining black one, bordered again with white, as in *De. Euphorbiæ*, and in the centre of the disc is a small patch of elongate whitish hairs: the posterior wings are black at the base, and have a fascia of the same colour near the hinder margin, placed upon a pale or reddish ground, with deeper clouds of the latter colour; the fringe is pale: the head and thorax are olive-brown, margined laterally with white: the abdomen also olive-brown, with a dorsal

row of minute white dots, and several large spots of the same on its sides, with two black ones at the base: antennæ brown, with the tip white.

Caterpillar olive-green with a yellowish dorsal line, and on each segment, on both sides, a large pear-shaped spot of light yellow edged with black; the stigmata are also yellow bordered with black, and below them is a yellowish line: the legs are black, the prolegs and tail of a rosy hue: it feeds on the yellow lady's bedstraw (*Galium verum*), wild madder (*Galium mollugo*), and dyer's madder (*Rubia tinctorium*). The chrysalis is dark brown.

De. Galii has been occasionally found in the neighbourhood of London. About twelve years since I saw a living specimen, which was taken in the beginning of June on some palings in the City-road, and a second was detected near the same spot a year or two back. M. Harris once found the caterpillar at Baruscray, near Crayford, Kent, but mistook it for that of De. Euphorbiæ, not being aware of the existence of De. Galii. It has several times occurred in the west of England. "Near Penzance in Cornwall, and Kingsbridge, Devonshire."—*Dr. Leach*.

Sp. 3. *lineata*. PLATE 12. f. 1.—*Alis anticis virescentibus, fasciâ longitudinali subundulatâ, striisque obliquis albidis, posticis nigris fasciâ latâ rubrâ nulosâ.* (Exp. alar. 3 unc. 3 lin.)

Sp. *lineata*. *Fabricius*.—De. *lineata*. *Steph. Catal.*

This species bears some resemblance to the last, upon a transient view; but its distinction is sufficiently evident: the anterior wings are pale olive-brown, with a narrow slightly-undulated ochraceous longitudinal vitta placed obliquely from the inner margin to the apex, intersected obliquely with a series of whitish lines following the direction of the nervures, and a subtriangular

Sp. 4. *Daucus*. *Alis anticis fusco-cinereis, fasciâ longitudinali rectâ ochraceâ, striisque obliquis albis, posticis nigris fasciâ angustâ rubrâ.* (Exp. alar. ♂ 2 unc. 5 lin.: ♀ 2 unc. 9 lin.)

Sp. *Daucus*. *Cramer*.—De. *Daucus*. *Steph. Catal.*—Sp. *lineata*. *Don*, vi. pl. 204. f. 1.

Allied to, and hitherto confounded by English writers (except Dr. Leach, who noticed the fact in the Edinburgh Encyclopedia) with the preceding insect, but very distinct therefrom: the anterior wings are plain cinereous brown, with a longitudinal straight ochraceous streak reaching nearly from the inner base to the apex, which is obliquely cut by several slender white lines on the nervures; on the disc is a small whitish dot; the hinder margin is of an ashy-gray: the posterior wings black, the base and a broad hinder margin being of that colour, with a narrow uniformly-coloured red central fascia: head and thorax ashy-brown, with a white lateral line on each side; the latter with four other longitudinal white lines on its disc, the two inner with an abbreviated







whiter spot on the disc; the hinder margin is ash-coloured; the cilia pale ashy-brown: the posterior wings are black at the base, with the rest of the wing pale clouded rosy, and having a narrow black band near the hinder margin; the cilia whitish: the head and thorax are olive-brown, margined laterally with white; the latter with two dorsal lines of the same colour: abdomen pale olive-brown, with a longitudinal row of white spots, bordered with black on the back, and another on each side of a larger size, diminishing to the apex, and with a row of black spots in the middle: antennæ brown, with the tip white.

Caterpillar above pale olive-green, beneath pure white; a dorsal line, the tail, two large circular spots on both sides of each segment, and the head rose-coloured; on each side is a longitudinal yellowish line, and on each segment on both sides a black dot above the upper rosy one: it feeds also on the yellow lady's bedstraw and on the vine. The chrysalis is of a rosy-brown.

*De. lineata* is unquestionably rare in England, and few collectors can boast the possession of specimens: it has however been captured in distant parts: the Rev. T. Skrimshire possesses a specimen which I believe was caught in Norfolk, and Mr. Dale has one which he obtained from Dr. Abbott's cabinet, also found eastward; in June, 1824, a beautiful and perfect specimen was taken off the mast of the Ramsgate steam-vessel at Billingsgate, and last year a wasted one was found near Bethnal-green: in addition to the above, three specimens were formerly taken near Kingsbridge in Devonshire, one of which I possess through the kindness of Dr. Leach, and have caused the accompanying figure to be taken therefrom. The above are the only indigenous examples I have seen; all the remainder which are placed in collections for this species being *De. Daucus*, hereunder described.

one placed anteriorly between them, and uniting them, as it were, to the head: abdomen reddish-brown, with a strong white dorsal line, bordered on each side with black spots; the sides each with an alternate series of large black and white spots, diminishing in size to the apex.

*De. Daucus* is a native of North America, and I have seen about eight specimens in the various English collections which have passed beneath my notice; but of these the history of one alone has come to my knowledge, and that I understand was taken near Lynn in Norfolk; the rest have probably been introduced in lieu of *De. lineata*, which was formerly known to inhabit Cornwall: a pair in my collection are reputed to have been found in England; I believe Mr. Haworth has another; and two were obtained by Mr. Vigors from the cabinet of Mr. Wilkin. "The Sphinx *lineata* of Donovan, which is said to be a doubtful inhabitant of England, was caught near Sunderland in June, 1823."—*Mr. J. O. Backhouse.*

B. Anterior wings very acute, subfalcate, the hinder margin having an emargination towards the apex: abdomen longitudinally striated: antennæ obscurely clavate. Larvæ not spotted, some of the anterior segments with a single large ocellus on each, and retractile; caudal horn smooth, sometimes nearly obliterated: pupa enclosed in a cocoon of leaves on the ground.

Sp. 5. Celerio. *Alis anticis griseis, strigis albis nigrisque, fasciâ argentâ nitente, posticis fuscis basi maculisque sex rubris.* (Exp. alar. ♂ 2 unc. 10 lin.: ♀ 3 unc. 1 lin.)

Sp. Celerio. *Linneé.*—*Harris' English Insects, pl. 28. f. 1.*—*De. Celerio. Steph. Catal.*

Anterior wings griseous with black lines, and an incurved whitish streak from the apex, almost to the base of the thinner margin; the anterior edge white, bordered with black; between this and the posterior margin is a second white streak acutely bent towards the former at the anal angle, where there is a blackish spot; the margin of the wing is pale griseous, and on the disc is a black spot edged with ochraceous: posterior wings brown, with the base and six marginal spots rosy; the hinder margin pale griseous: head cinereous, with two whitish-ash streaks, in which the antennæ are inserted, from the palpi, passing over the eyes, to the base of the wings: thorax deep cinereous, with a whitish-ash streak on each side, and another of a rich golden-yellow: abdomen gray-brown, with a silvery-white continuous dorsal line, and a streak of spots on each side.

Caterpillar brown, with a series of lunules passing over the stigmata on each side, and a lateral line terminating at the tail, yellowish; the fourth and fifth segments with a large ocellus, having a black pupil and yellowish iris: it feeds on the common vine (*Vitis vinifera*). The chrysalis is reddish-brown, with the head and wing-cases dusky.

The admission of this insect into the British Fauna has been the subject of dispute with many persons, and its indigenous origin is still questionable, as the only pabulum which has been hitherto observed to afford sustenance to the larvæ is the common vine, which is not an aboriginal native of this country: nevertheless, I think it probable that it may subsist upon other plants, as we find that many species which were formerly supposed to devour one plant alone are now known to feed upon several. The first recorded specimen of the perfect insect was taken flying in Bunhill-fields burying-ground, so long ago as July, 1779; and the specimen now exists in a high state of preservation in Mr. Haworth's collection, having been purchased by him at the dispersion of that of Mr. Francillon. Subsequently to the above capture the larvæ have been found several times in Cambridgeshire—first, by Mr. F. Skrimshire, near Wisbeach, and afterwards by a friend of the Rev. L. Jenyns, in the Isle of Ely: two or three were also taken about

fifteen or sixteen years since in a garden at Norwich, and were kept until they changed to pupæ; but unfortunately, in that state, their metamorphosis ended: one of these pupæ I have in my collection. Of late, however, the perfect insect has occurred more than once, and in a totally different part of the country: three specimens, as I am informed by the Rev. F. W. Hope, were taken near Oxford several years ago. In August, 1826, an injured one was found resting on a wall near Birmingham; and last summer a second was secured not far distant from the same locality; the latter I have in my possession. Again, Mr. Marshall informed me in March last, that, in his way through Manchester, he met with an individual who possessed upwards of a dozen living pupæ, which were procured from larvæ found in that neighbourhood during last season.

How far the above facts may induce a belief that the insect is truly indigenous, I shall leave to the judgment and discrimination of those who are far better qualified to judge of the geographical distribution of insects in general than myself, merely observing that the species in question inhabits various parts of the south of Europe, and that, by admitting it into our Fauna, no very erroneous conclusions are likely to result therefrom, in an attempt to investigate the natural distribution of the Sphingidæ; which must be the case, to the detriment of science, when such transatlantic species as *Sp. Druræi*, &c. are thrown into the scale as natural productions of this our "favoured island." The mere circumstance of specimens of such insects as those above alluded to having been caught at large, either in the perfect or previous states, is no argument in favour of their being indigenous, to a commercial country at least: and the naturalist, who regards the knowledge of truth as superior to the false pride which generally fills the breast of the mere collector, whose utmost ambition is gratified by the sole possession of objects that others cannot obtain, will pause ere he swell the list of the productions of any given locality with creatures which have been probably introduced by the aid of commerce\*. Such productions it is, in fact, highly essential should be

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\* Amongst nearly fifty species of tropical and transatlantic insects, which have been taken at large in the West India Docks, by Messrs. Beck, may be instanced three specimens of the huge *Mygale avicularia*; one of which must have existed nearly a year in this country, as the pile of South American wood

regarded with suspicion, and their true locality, if possible, pointed out; otherwise we must continue in wilful ignorance to the end of time, and truths that might shine forth as brilliantly as the orb of day will be for ever shrouded in the obscurity of impenetrable darkness. An earnest desire to give the insects of this country free from such admixture has induced me to express my doubts upon the origin of particular species by placing them in a note, when I had not oral or other testimony for admitting them into the body of the page; and even in the latter cases to give my suspicions when there has been cause for doubt; and I may here observe, that as the descriptions of the insects herein are all corrected and compared with the objects

† Sp. 6. *argéntata*. *Alis anticis griseis immaculatis, strigâ rectâ obliquâ albidâ strigisque obsolutoribus fuscis, posticis fuscis ad angulum ani fasciâ pallidâ*. (Exp. alar. 2 unc. 10 lin.)

Sp. *argéntata*. *Haworth*.—*De. argéntata*. *Steph. Catal.*

Somewhat allied to the last: anterior wings plain griseous, with an oblique, straight whitish streak from the apex to nearly the base of the thinner margin, accompanied anteriorly with two dusky streaks, and posteriorly with about four mere obsolete ones of the same colour, the hinder margin itself slightly rosy; the disc with a single black spot: posterior wings brown, rather deepest at the base, with a pale ochraceous streak towards the anal angle, which is still paler: head as in *De. Celerio*: thorax slightly olivaceous, with a faint dorsal, and a whitish-ash lateral line, and a pale luteous one between, on each side; abdomen with a broad faint dorsal silvery-white streak, and an obsolete golden one on each side.

Dr. Leach also obtained a specimen of this insect, which is in all probability synonymous with the *Sph. Celæno* of Esper, from Dr. Lettson's cabinet, and a second was obtained by myself from an old collection which was broken up about fifteen years since; but I am decidedly of opinion that neither of them have any claim to be considered natives of Britain.

in which it was found had been unshipped and packed about eleven months! yet it cannot be considered indigenous, any more than the *Blattæ gigantea*, *Americana*, *Maderæ*, *orientalis*, &c., which occur in Britain (the latter especially, abounding in the lower apartments of most houses throughout the metropolis). The *Prionus accentifer*, *Oliv.*, (*Acrocinus*, *Illig.*) I have seen at large more than once, and various other exotic species, such as *Callidia fulminans et fasciatum*, *Lamia dentator*, *Stenochori quadridentatus et spinicornis*, *Tetraopes tornator*, &c.; as well as a fine Chinese *Conocephalus*, which subsisted upon tea, and continued alive nearly four months in my possession; but neither of the above can be considered indigenous, and doubtless the *Cerambyx litteratus* of Donovan has no pretensions to such origin.

themselves, unless when mentioned to the contrary, a mere error in nomenclature, in any instance, cannot affect the question at issue, as in such case the insect *described*, not the one *named*, is the species which inhabits the British isles.

Sp. 7. Elpenor. *Alis anticis olivaceis fasciis tribus obliquis purpureis, posticis rubris, basi atris.* (Exp. alar. 2 unc. 6—8 lin.)

Sp. Elpenor. *Linné.*—*Don*, iv. pl. 122.—*De. Elpenor.* *Steph. Catal.*

Anterior wings olivaceous, with the costa, a spot at the base, two oblique fasciæ

the first abbreviated anteriorly, the second reaching from the thinner margin to the apex—the hinder margin and the cilia of a fine reddish-purple, varying in different individuals; a minute discoidal dot, and the thinner margin of the wings, pure white: posterior wings black at the base, the hinder margin reddish-purple, more or less brilliant, and sometimes with a transverse olivaceous streak: the cilia pure white: head, thorax, and abdomen above olivaceous, palpi, superciliary line, four subarcuated lines on the thorax—the two inner united anteriorly—the sides, two spots at the base, and a streak on the back of the abdomen reddish-purple: sides of the thorax, and sometimes a row of spots, varying in number, on those of the abdomen, white; a spot at the base of the anterior wings, and another at the base of the abdomen, black.

Caterpillar, when young, green; which tint is not uncommonly preserved throughout; but some individuals, at the third moult, become varied with yellow, or of a plain dusky-brown; the former have a black dorsal line, and some spots of a similar colour, varied with yellow, round the stigmata: in both, the third segment has two parallel black streaks on each side, and the two following, a large ocellus with a bluish pupil and black iris: the legs are yellow. It is found in the autumn, and feeds on the yellow lady's bedstraw (*Galium verum*), hairy willow-herb (*Epilobium hirsutum*), loose-strife, or willow-herb (*Lythrum salicariæ*), common vine (*Vitis vinifera*), &c. The pupa is dull griseous, posteriorly brown, with the stigmata obscure.

The most abundant species of the Sphingidæ in the south of England: the larva occurring chiefly in damp and marshy situations, particularly near Hackney and Battersea; also in the neighbourhood of Hertford and Ripley; but the imago usually frequenting gardens towards the end of June. “Frequent in Devonshire.”—*Dr. Leach*. “Far from uncommon at Netley, Salop.”—*Rev. F. W. Hope*. “Very common in the winged state everywhere in Cambridgeshire.”—*Rev. L. Jenyns*. “Near York, not common.”—*W. C. Herwitson, Esq.* “A single specimen taken near Newcastle.”—*G. Wails, Esq.*

Sp. 8. Porcellus. *Alis anticis flavescenti purpureoque variis, posticis basi fasciis, fasciâ flavescente margineque purpureo, abdomine subtus albo punctato.* (Exp. alar. 1 unc. 10 lin.—2 unc. 1 lin.)

Sp. Porcellus. *Linné.*—*Don*, ix. pl. 314.—*De. Porcellus.* *Steph. Catal.*

Similar to the last, but considerably smaller: the anterior wings are of an ochraceous yellow, with various irregular purple clouds on the costa, and a broad, internally notched, purple margin; two obsolete dusky lines cross the disc obliquely, and the fringe is purplish spotted with white towards the anal angle; the posterior wings are dusky-black at the base, and purplish at the hinder margin, the intermediate space being more or less ochraceous-yellow: the cilia white, spotted irregularly with purplish: head, thorax, and abdomen sometimes entirely of a rich reddish purple; at others with the disc of each yellowish: at the base of the anterior wings is a tuft of whitish hairs.

Caterpillar with a very minute caudal appendage: brown or green, with a large blue ocellated spot on each side of the fourth, fifth, and sixth segments, and a narrow paler lateral streak: its food is similar to that of *De. Elpenor*. The chrysalis is pale brown, with the head and wing-cases dusky.

Found occasionally near London, at Croydon, Birch and Coombe-woods, on Wandsworth-common, &c. in the beginning of June. "Netley, Salop."—*Rev. F. W. Hope*. "Bred abundantly by the collectors at Birmingham."—*Rev. W. T. Brec*. "One taken near York."—*W. C. Hewitson, Esq.* "Near Gussage, Dorset; and very common at Winterslow, near Salisbury."—*Mr. Ingpen*. "Amesbury, Hants."—*Rev. G. T. Rudd*. "I took a single specimen on the Devil's Ditch, Cambridgeshire, June 12, 1827, resting on a stem of burnet."—*Rev. L. Jenyns*.

### FAMILY III.—SESIIDÆ.

*Antennæ* prismatic, ciliated in the males, slightly hooked, the apex terminating in an oblique scaly process: *palpi* short, clothed with scales, the terminal joint extremely minute: *abdomen* conical, with the apex tufted. *Larva* naked, with a horny appendage on the hinder segment: *pupa* smooth, without spines, enclosed in a cocoon upon the ground.

In common with the *Zygænidæ* and *Ægeriidæ*, though unlike the *Sphingidæ*, the insects of this family fly in fine weather only, towards the middle of the day, their flight being suspended about noon for a short period; it is performed with the utmost rapidity, and is accompanied by a considerable humming noise; whence the insects have been termed *Humming-bird*, or *Bee-moths*. They may be known from the *Sphingidæ* by their comparatively diminutive size, by the form of the apex of the antennæ, and more especially by the tuft of scaly hairs with which the abdomen is terminated: from the *Ægeriidæ* they may be distinguished by their antennæ being straight, destitute of a tuft at the apex, and prismatic. Their larvæ feed on the leaves of plants, and their pupæ are enclosed in a cocoon on the surface of the ground.

The two British genera contained in this family may be thus briefly characterized :

<i>Alar</i>	{	squamis tectæ :	. . . . .	27. MACROGLOSSA.
		denudatæ :	. . . . .	28. SESIA.

GENUS XXVII.—MACROGLOSSA, *Ochsenheimer*.

*Antennæ* uncinated, gradually thickening nearly to the apex, which is scarcely attenuated; simple in the females: *palpi* contiguous above the maxillæ, thickly clothed with scales: *maxillæ* as long as the *body*; the latter elongate, clothed with scales, tufted on the sides towards the apex and at the tip: *wings* elongate-lanceolate, opaque. *Larva* elongate, slightly attenuated in front, caudal horn straight: *pupa* elongate, head-case produced.

MacroGLOSSA may be detected from Sesia by its opaque wings, and by the elongation of its body, which is very strongly tufted at its apex, and densely clothed with elongate, hair-like scales. Frequent gardens.

Sp. 1. Stellatarum. *Alis anticis fusco cinereis, strigis duabus nigris, posticis ferrugineis, abdominis lateribus albo nigroque variis.* (Exp. alar. 1 unc. 9 lin.—2 unc.)

Sp. Stellatarum. *Linné*.—*Don*, vii. pl. 155.—*Ma. Stellatarum. Steph. Catal.*

The anterior wings dusky or dusky-brown, with several obsolete and two waved transverse and black strigæ, and a central black spot, generally with a pale cineture: posterior rusty-tawny, with the base and hinder margin dusky; the latter tinted with rusty: the fringe tawny, dusky at the base: head, antennæ, thorax, and abdomen, above, dusky brown; the latter varied with black and white at the sides, with a black anal tuft.

Caterpillar green, speckled with white, with a whitish or yellowish lateral line from the head to the caudal horn, and below this a pale yellow one: the anterior legs deep yellow: the horn blue at the base, reddish-yellow at the tip: previously to changing, it assumes a dark hue, and the lateral line becomes purplish. It feeds on the various kinds of bedstraw (*Galium*, particularly the *Ga. verum et aparine*), and also on the dyer's weed (*Rubia tinctorium*). The chrysalis is of a pale brown, with the wing-cases darker: its form is peculiar, the head-case being rounded, and the middle swollen.

Of this insect my friend Mr. Haworth says, " This interesting species, in the winged state, frequents gardens; flying, in sunny weather, between the hours of ten and twelve in the morning, and those of two and four in the afternoon. Its food is the nectarous juice of tube-bearing flowers; this it extracts with amazing address, by the assistance of its exerted spiral tongue, inimitably poisoning itself all the while on rapidly vibrating wings; whence its name of

Humming-bird." It is far from uncommon, and in some places it abounds. During two short visits at Dover, in August, 1818 and 1819, I observed it in great abundance in the winged state, and in June of the latter year, accompanied by the late Mr. Blunt, we found the larvæ in profusion beneath the cliffs: I have also taken the insect plentifully at Hertford, and occasionally at Ripley. There are usually three broods in the year, appearing respectively at the end of April, June, and August; some of the latter have been known to hibernate. "Common near Ely, Bottisham, &c."—*Rev. L. Jenyns*. "Not very common near York; but more abundant near Newcastle on Tyne.—*W. C. Hewitson, Esq.* "Common round Newcastle."—*G. Wailes, Esq.* "Kimpton, Hants; and banks of the Tees, Yorkshire."—*Rev. G. T. Rudd*.

#### GENUS XXVIII.—*SESIA, Fabricius*.

*Antennæ* thickening from the base nearly to the apex, and from thence to the tip, becoming slender, terminated by an oblique seta: *palpi* contiguous above the maxillæ, very short, concealed by being densely clothed with hairy scales: *maxille* very long: *body* somewhat ovate, thickly clothed with hair, the apex with a tuft: *wings* with the disc entirely transparent; the margins, and sometimes the transverse nervure, clothed with scales, and opaque. *Larva* elongate, rather attenuated in front; caudal horn curved; *pupa* slightly elongate.

*Sesia* differs from *Macroglossa* in the transparency of the disc of its wings, and in having the body rather short, ovate, and thickly clothed with long hair, as well as by the form of the antennæ, and several minor characters. They frequent woods and meadows by the sides of plantations.

Sp. 1. *Fuciformis*. *Olivaceo-fulva, abdomine fulvo, fasciâ nigrâ, alarum margine angusto fusco*. (Exp. alar. 1 unc. 8—9 lin.)

Sp. *Fuciformis*. *Linné*.—*Se. Fuciformis*. *Steph. Catal.*—*Se. Bombyliformis*: *Curtis*, i. pl. 40.

Tawny-olive; abdomen with the third and fourth segments black, more or less clouded with fulvous, the two following orange-tawny, whitish at the sides, the caudal tuft black, with the centre orange: body beneath pale yellow, with a band on the abdomen anteriorly, the tuft, apex of the tibiæ, and the tarsi black: the latter brownish in the female: wings iridescent, the anterior with the costa, hinder margin, and the inner margin, especially at the base, clothed with brown scales; posterior with the inner angle, and a very narrow margin, also clothed with the same: antennæ cyaneous.

Caterpillar spinous when young; afterwards smooth, and varying much; usually green, with a paler lateral line, and a waved purplish one above, terminating



at the base of the tail, which is of the same colour; beneath the former are several oblique purplish streaks placed over the stigmata: it feeds on the devil's-bit scabious (*Scabiosa succisa*). The chrysalis is brown.

This is decidedly the rarest species of the genus near London; though near Enborne, in Berkshire, I was informed by Mr. Dale, that he formerly captured it in great plenty, at the end of May and beginning of June. It is probably a native of Cambridgeshire. "I am almost certain it appears in certain seasons in the fens about the middle of May: Professor Henslow saw several specimens this year in Horningsea-fen, and last year I also noticed one or two at Wood Ditton; but neither of us have succeeded in capturing a single specimen: its food, the scabious, abounds in the fens."—*Rev. L. Jenyns*. "New Forest, Hants, in May last."—*Mr. Weaver*.

Sp. 2. Bombyliiformis. *Viridi-flava, abdomine viridi flavo, fascia marginæque lato alarum atro-purpurascens*. (Exp. alar. 1 unc. 8—10 lin.)

Sp. Bombyliiformis. *Ochsenheimer*.—*Steph. Catal.*—Sp. Fuciformis. *Don*, iii. pl. 87.

Greenish-yellow, the third and fourth segments of the abdomen crimson-purple, more or less clouded with black, especially on the sides, the two following orange-yellow, with the sides yellow; the caudal tuft black, with a yellowish centre: body beneath pale yellow, with a reddish-brown transverse band on the abdomen anteriorly, clouded with black in the male, and the caudal tuft

Sp. 3. Cimbiciformis. *Rubro-flava, abdomine rubro-fulvo fasciâ purpurâ, alarum fasciâ marginæque lato rubro purpureis*. (Exp. alar. 2 unc.—2 unc. 2 lin.)

Se. Cimbiciformis *mihi*.—*Steph. Catal.*

Reddish-yellow; abdomen with the third and fourth segments purplish-red, the two following yellowish-red, with a whitish spot on each side; the caudal tuft black, with its centre and sides reddish; beneath, the head, thorax, anterior and intermediate legs and base of the posterior, yellowish; the abdomen and hinder tarsi reddish; wings iridescent; anterior, with the costa, base, discoidal spot, and margin clothed with purplish-red scales; the base and margins of the posterior the same: beneath, the margins of all the wings are of a bright orange or rusty-purple.

Upon the dispersion of Mr. Plastead's collection I obtained a fine pair of this species therefrom; but as it is indigenous to North America, I conceive that the ends of science will be more advantageously benefited by the simple indication of the fact, than by giving the insect as an inhabitant of this country, which the mere detection of specimens in a collection does not warrant; but, on the contrary, as this insect was considered by Mr. Plastead as the Sp. Fuciformis, it is evident that he did not scruple to admit *foreign* specimens into his cabinet.

of a dusky or reddish-black; the posterior tarsi and tips of the others dusky: wings iridescent, the anterior with the costa, hinder margin, and discoidal spot clothed with purplish-brown scales, the base and part of the costa greenish-yellow: posterior wings similar, but the hinder margin narrower and no discoidal spot; beneath, all the wings have a lighter-coloured margin, and the base and costa of the anterior are of a pale ochraceous-yellow: the antennæ are black, tinged with cyaneous.

Caterpillar green, with a yellowish dorsal and lateral line; some reddish spots on the sides; the legs violet; horn reddish-brown with an orange tip: it feeds on the honeysuckle (*Lonicera Periclymenum*) and bedstraw (*Galium*), &c.; but not on the wood of willows, as erroneously stated by some writers. The pupa is dusky-brown with reddish spots.

I have repeatedly seen and occasionally captured this insect towards the end of May at Coombe and Darenth woods, particularly the former, where I have observed it, hovering over the blossoms of the harebell (*Scilla nutans*), abundantly: it also occurs sometimes on Epping-forest. “Rather plentiful during last summer near York.”—*W. C. Hewitson, Esq.* “At Littleton-copse near Kimp-ton.”—*Rev. G. T. Rudd.*

#### FAMILY IV.—ÆGERIIDÆ.

*Antennæ* fusiform, a little curved, ciliated in the males, the apex terminating in a plume of scales: *ocelli* two, minute, placed between the antennæ and the base of the thorax: *palpi* elongate, thickly clothed with scales and long hairs, the last joint elongate: *abdomen* cylindric, tufted at the apex: *wings* horizontally displayed, generally naked, with the tips above opaque. *Larva* sub-cylindric, hirsute, tail-less: *pupa* elongate, with a row of spines on each segment; changes in the interior of plants.

The insects of this family are generally of small size, and are at once distinguished from the other Crepuscularia (except *Sesia*) by the transparency of their wings; but from all they may be known by that character added to the slender curved antennæ, and by the possession of stemmata or ocelli. They fly by day; their larvæ are pale and fleshy; reside beneath the bark, pith, or internal substances of various trees; and generally reach their final state in one year, though, according to Esper, *Trochilium apiformis* is several seasons in attaining perfection.

The two following genera occur in Britain:

<i>Maxilla</i>	{	brevissimæ: antennæ abbreviatæ: . . . . .	29. TROCHILIUM
		elongatæ: antennæ longiores: . . . . .	30. ÆGERIA.

GENUS XXIX.—TROCHILUM, *Scopoli*.

*Antennæ* short, more or less serrated, especially in the males, stout, gradually incrassated nearly to the apex, which is curved, acuminate, and terminates in a hairy tuft: *palpi* moderately long, parallel, suddenly recurved, the base very hairy, the apex scaly and attenuated: *head* small: *clypeus* densely clothed with elongate hairs: *thorax* and *abdomen* stout, the latter with a very small tuft at its apex: *wings* with the tips not clothed transversely with scales.

Notwithstanding the great resemblance between this genus and the following, their characters are sufficiently distinct to warrant their separation: the present genus is composed of much larger insects than *Ægeria*, and they are distinguished by their remarkably short tongue; short, incrassated, and slightly serrated antennæ: robust body; small head, with a hairy crest; and by the transparency of the apex of the anterior wings. They also differ in habit, the insects of the present genus being very sluggish, usually remaining quietly at rest on trunks, and when urged to flight, flying very heavily; thus and by their abbreviated maxillæ approaching in habit to the *Bombycidæ*: whence I presume the genus would more naturally follow than precede *Ægeria*, though I have not ventured to adopt that arrangement.

Sp. 1. *Apiformis*. *Capite flavo, thorace nigro maculis quatuor flavis, abdomine flavo cingulis duabus nigris.* (Exp. alar. 1 me. 7—10 lin.)

Sp. *Apiformis*. *Linnaeus*.—*Don*. i. pl. 25.—*Tr. Apiformis*. *Steph. Catal.*

Head yellow; a white line before, and a yellow one behind, the eyes: palpi yellow, dull at the tip: antennæ above dusky-black, beneath ferruginous: thorax dusky-black, with two large trigonate lateral spots anteriorly, and two smaller ones posteriorly: abdomen yellow, with the first and fourth segments dusky-black, the remainder with the margins above black, the fifth and two hinder dusky on the back, with a lateral brownish line: femora outwardly yellow, inwardly dusky-black: tibiæ rich tawny-orange; tarsi paler: anterior wings sprinkled with brownish, the base with a yellow spot, the nervures, margins, and a transverse band rusty-brown; beneath with the band and margins paler; the anterior yellowish at the base: posterior also sprinkled with brownish, with the margins and nervures brown, beneath concolorous, with the anterior margin fulvous; all the fringe tawny-brown. Male less, the abdomen more slender, the tuft more distinct: the antennæ slightly serrated internally.

Caterpillar whitish, with an obscure dorsal line; head large, brown: it feeds in the trunks and the roots of the poplar (*Populus niger*), and aspen (*Populus tremula*). Chrysalis elongate, brown.

This insect occurs in various parts of the country, but nowhere in greater abundance than on Epping-forest, near Wanstead, where it may be readily obtained by diligently searching, towards the end of June, the trunks of the fine aspen trees, which form so conspicuous an object on that part of the forest. I have also frequently met with the insect at Coombe-wood.

Sp. 2. *Crabroniformis*. *Capite atro, thorace maculis duabus ferrugineis, collaris flavo, abdomine flavo cingulis duabus atris.* (Exp. alar. 1 unc. 6—8 lin.)

Sp. *Crabroniformis*. *Lewin.* (*Linnean Transactions*), iii. pl. 3. f. 6—10.—  
Tr. *Crabroniformis*. *Steph. Catal.*

Head brown; a white streak before the eyes: palpi fulvous yellow, with a few black hairs at the base externally: antennæ black, fulvescent at the base beneath: thorax glossy brown, with a narrow yellow collar anteriorly, and a dull yellowish spot posteriorly on each side: abdomen yellow, with the first, second, and fourth segments, and a broad margin to the third, black; the sides of the fourth with a yellow patch: femora dusky-brown, glossy: tibiæ rich fulvous, spotted with yellow beneath: tarsi fulvous: wings above, with the nervures and margins ferruginous, and a narrow abbreviated transverse band of the same colour on the anterior; beneath rather fulvescent: cilia brownish. Male smaller and more slender, the abdomen of a deeper colour, and the antennæ serrated internally.

This varies considerably in colour, arising from the width of the black margins of the abdominal segments.

Caterpillar whitish, with a brown spot on several segments near the legs: it feeds under the bark of the willow (*Salix caprea*).

Not very common, and rather later in the time of its appearance than the foregoing. I have only met with it occasionally at Darent-wood in the beginning of July; though during that month, in 1817. I saw it in profusion flying heavily along, on the south-west border of the wood. “A single pair taken near Newcastle.” *G. Wailes, Esq.*

### GENUS XXX.—ÆGERIA, *Fabricius*.

*Antennæ* long, slender, gradually increasing in size nearly to the apex, which is slightly curved and acuminate; in the males they are slightly ciliated, subserrated, or pectinated: *palpi* longer than the head, divaricating, gradually reflexed, thickly clothed beneath with scales and long hair; the terminal joint somewhat naked and acuminate: *head* moderate: *clypeus* densely clothed with flat scales: *thorax* and *abdomen* rather slender, the latter with a large trilobed tuft, variable in form at its apex: *wings* transversely covered with scales at the tip.

Ægeria differs from all the foregoing insects by the union of its transparent wings, slender antennæ and body; and particularly from Trochilium by the latter characters, added to the elongation of its maxillæ, comparatively larger head, divaricating palpi, scaly clypeus, and clothed apex to the wings; in manners they are essentially different, the imago being remarkably vivacious and active, being perpetually in motion, and flying with the greatest rapidity, alighting upon flowers, from which they derive their nourishment, or basking upon leaves in the blaze of the sun, and continually moving some part of their bodies.

As in most genera of any extent, there is considerable diversity of appearance in the contents of this: I shall therefore divide it into sections.

A. Antennæ much shorter than the body: of the males distinctly pectinated: anterior wings nearly clothed with scales: abdomen robust.

Sp. 1. Asiliformis. *Alis anticis fuscis, posticis hyalinis, abdomine nigro cingulis tribus flavis, antennis nigris.* (Exp. alar. 11 lin.—1 unc. 3 lin.)

Lc. Asiliformis. *Fabricius.*—Sp. Asiliformis. *Don. xi. pl. 384.*—Æg. Asiliformis. *Steph. Catal.*

Bluish-black: head with a white spot before the eyes; collar yellow: palpi with the base black, the apex yellow: antennæ cyaneous, beneath fulvous at the base: male with the tip reddish: thorax with a spot at the base of the wings, and a line on each side, yellow: abdomen glossy, with three yellow belts above yellow; caudal tuft black, with two longitudinal yellow streaks: femora black, the posterior yellow at the base: tibiæ yellow, with a black spot externally: tarsi fulvous: anterior wings above fuscous, with the nervures and costa bluish; beneath pale tawny, with an indistinct central tawny lunule; posterior transparent, with a discoidal lunule; the nervures and margin fuscous: fringe of all the wings ashy-brown. Male differs in having the antennæ very strongly pectinated nearly to the apex, the abdomen with four yellow belts, and in being considerably smaller.

Occasionally taken on poplars near London in June. I have obtained it from the neighbourhood of Bexley and from Birch-wood; but it is doubtless a rare species, and exists in few collections: of the male I have hitherto seen but two specimens, one of which I possess. “Colney-hatch Wood, an Umbelliferae, 8th July last.”—*Mr. Inghen.*

B. Antennæ as long as the body: of the males generally ciliated: anterior wings with the disc hyaline.

a. *Abdomen more or less robust and abbreviated, fasciated with whitish or yellow.*

† Sp. 2. *Sphæciformis*. PLATE II. f. 1. *Alis hyalinis, anticarum marginibus fasciâque nigro-violaceis, abdomine nigro, cingulo albido, antennis ante apicem flavescentibus.* (Exp. alar. 1 unc.)

Sp. *Sphæciformis*. *Villars.*—Æg. *Sphæciformis*. *Steph. Catal.*

Blue-black: palpi above black, beneath yellow; tip dusky: antennæ bluish-black, with a yellowish space near the apex: thorax with a lateral and longitudinal yellow line: abdomen glossy; above with a basal spot and the apex of the third segment whitish-yellow, beneath with a basal spot and the margin of the fifth segment yellow: caudal tuft bluish-black: femora blue-black, with the anterior yellow outwardly at the base: tibiæ with luteous spines; the hinder internally yellowish: the tarsi yellowish spotted with black: anterior wings above with the nervures, apex, margin, and a transverse discoidal line blue-black; beneath with the margin yellowish, and a yellow spot on the outer edge of the transverse band; posterior with the nervures, hinder margin, and anterior discoidal lunule blue-black; beneath with the nervures fulvous: fringe rosy-brown. Male with the antennæ slightly serrate.

Larva said by Oehlmann to feed on the birch (*Betula alba*.)

Decidedly a rare insect, of which I have seen five indigenous specimens only: the first was caught very many years ago, and is in the collection of Mr. Latham; afterwards two (a pair) were found in the woods of Southgate, and are, respectively, one in the British Museum, the other in Mr. Vigors's cabinet. Mr. Ingpen has also a specimen, which was taken in a wood to the north of London; and the fifth was taken in the Isle of Wight, by Mr. Weaver, in July, 1826, and is in Mr. Stone's cabinet.

Sp. 3. *Ichneumoniformis*. *Alis hyalinis, anticarum marginibus fasciâque extus crocêâ fuscis, abdomine nigro, segmentis margine flavis, antennis ante apicem fasciâ flavâ.* (Exp. alar. 10—11 lin.)

Se. *Ichneumoniformis*. *Fabricius.*—Æg. *Ichneumoniformis*. *Curtis*, ii. pl. 53. —*Steph. Catal.*

Brownish-black: palpi orange, with some dusky scales on the sides: head with its hinder margin, the clypeus, a spot at the base of the wings, a lateral line on the thorax, five or six nearly equidistant bands on the abdomen, a streak at its base, and the centre and sides of the caudal tuft, yellow: legs tawny yellow: the femora black, with a yellow line on the anterior: the base of the tibia, and a spot towards the apex, black: antennæ above with the base and apex dusky; the centre ochraceous, beneath ferruginous: anterior wings, with the costa, discoidal spot internally, hinder margin, and fringe, tawny-brown; outer edge of discoidal spot, apex, and inner margin of the wings, orange; posterior wings with four nervures and the hinder margin tawny-brown; the remaining nervures and a minute triangular spot on the anterior margin orange. Male with the body more slender; the antennæ slightly ciliated, and nearly all blue-black; the abdomen sometimes with seven rings.







Taken in several and very distant parts in June; but rather a scarce insect: the first pair were obtained by the late Mr. Francillon, from the west of England; it was afterwards found by the late Mr. Cranch in Cornwall and Devonshire; and I believe it has been taken near Scarborough. "South Creak, near Fakenham."—*Rev. T. Skrimshire*. "At Hastings."—*J. Curtis, Esq.* "Several pairs in the Isle of Wight."—*Mr. Weaver*. "Near Teignmouth, Devon."—*Capt. Blomer*.

† Sp. 4. Chrysidiformis. *Alis anticis subhyalinis croceis, margine superiori maculâque adjectâ nigris, abdomine nigro, cingulis duobus luteis.* (Exp. alar. 10 lin.)

Sp. Chrysidiformis. *Hübner*.—Æg. Chrysidiformis. *Steph. Catal.*

Bluish-black: palpi black, with the tip pale fulvous: head black; clypeus white; hinder margin yellowish: thorax glossy, with a few yellow scales and a white spot at the base of the anterior wings: abdomen shining, clothed with ashy-down, with the fifth and terminal segments edged with whitish: the caudal tuft black, with its middle yellow: thighs blue-black; the anterior outwardly white, the tibia orange, tarsi lutescent: anterior wings saffron colour, with the margins and a central spot black: with an elongate hyaline patch anterior to the last, and a round one behind: posterior hyaline, with the nervures, margins, and cilia, ashy-black; a minute orange spot on the anterior edge: antennæ above dusky-black; beneath paler, with the base white.

This elegant species is unique in Mr. Haworth's cabinet; he having purchased the only indigenous example out of the collection of the late Mr. Francillon, who formerly assured him that he caught the specimen in a thick grove himself.

Sp. 5. Cynipiformis. PLATE 11. f. 2. ♂.—*Alis hyalinis, marginibus venisque fuscis, anticarum maculâ lunari crocâ, abdomine nigro, cingulis tribus aut quinque flavis; fâmina barbâ flavâ.* (Exp. alar. 9—11 lin.)

Se. Cynipiformis. *Ochsenheimer*.—Æg. Cynipiformis. *Steph. Catal.*

Blue-black; head very glossy, with a snowy spot before the eyes, the hinder margin yellow: palpi yellow, with the sides black: thorax shining, with a lateral and longitudinal yellow line: abdomen with a basal streak, three equidistant belts, and the caudal tuft yellow; the latter sometimes with a few black hairs at the sides; femora blue-black, the anterior outwardly yellow: tibia yellow, with a cyaneous-black ring: tarsi yellow: anterior wings above with a yellow spot at the base; the nervures, a transverse discoidal line, and margins, brown, glossed with blue and tawny; the outer edge of the discoidal line croceous; beneath with the apex glossed with violet and fulvous: the margins pale-tawny; posterior with a minute lunule, the nervures and margins dusky-black: antennæ blue-black, with the basal joint yellow beneath. Male differs in being less, having the antenna subpectinated internally; the

abdomen slightly sprinkled with yellow, the terminal belt yellow, the caudal tuft black above, with the centre and sides yellow beneath.

There is so much apparent difference in the sexes of this pretty species at a glance, that they not only seem to belong to different insects, but they have been described as such: a slight examination, however, readily shows their disparity to be merely that of sex; a fact that has been incontrovertibly proved by various persons. Until within these ten years, it was esteemed a scarce species; but it has lately occurred rather plentifully in several places: I have taken it often at Coombe and Darenth Woods, at the end of May and beginning of June. "Near Cheltenham, Gloucestershire."—*Dr. Leach*. "In Clapham Park Wood, Bedfordshire."—*J. C. Dalc, Esq.*

Sp. 6. Tipuliformis. *Alis hyalinis, anticis apice flavis, marginibus fasciâque nigris, abdomine nigro, segmentis alternis margine flavis.* (Exp. alar. 8—10 lin.)

Sp. Tipuliformis. *Linnaeus*.—*Don*. ii. pl. 52, 53.—*Æg.* Tipuliformis. *Steph. Catal.*

Blue-black: head black, with a white streak before the eyes, hinder margin yellow; palpi above black, beneath yellow: thorax glossy, with a lateral and longitudinal yellow line: abdomen shining, with the margin of the third, fifth, and seventh segments, yellow, the caudal tuft immaculate blue-black: femora blue-black, the anterior with a yellow line; tibiæ blue-black, with yellow hairs; the tarsi above dusky, spotted with yellow, beneath yellow: anterior wings above, with the nervures, and a broad transverse band, bluish-black, the apex rather golden; beneath, with the costa and inner margin yellowish: posterior with the nervures, the margins, and minute anterior lunule, black: cilia dusky: antennæ blue-black. Male less, with the antennæ slightly pectinated internally, and the terminal belt on the abdomen double.

Caterpillar whitish, with the head and legs brownish, and an obscure dorsal line: it feeds upon the pith of the currant-tree (*Ribes rubra*).

A very common species, inhabiting gardens in most parts of the country: it appears towards the middle of June. "Rather common in gardens at York."—*W. C. Hewitson, Esq.* "Near Newcastle."—*G. Wailes, Esq.*

b. *Abdomen slender and elongated, generally with a single red belt.*

Sp. 7. Mutillæformis. *Alis hyalinis, anticarum marginibus fasciâque nigris, abdomine nigro, cingulo fulvo, palpis nigris, (in mare) subtus albis.* (Exp. alar. 8—10 lin.)

Sp. Mutillæformis. *Laspeyres*.—*Æg.* Mutillæformis. *Steph. Catal.*—Sp. zonatus. *Don*. vi. pl. 195.

Blue-black: head shining, with a very narrow silvery streak before the eyes:

palpi black; white beneath in the male: thorax glossy immaculate; breast with a large golden spot anteriorly: abdomen glossy, the fourth segment above fulvous, beneath black, with a white margin; caudal tuft immaculate bluish-black: femora blue-black, anterior with a whitish line, tibiæ and spines blue-black; tarsi paler: anterior wings above, with the nervures, margins, and a broad transverse band, blue-black; beneath, with the tip, margins, and border of the transverse band golden; posterior, with the nervures, margins, and minute anterior lunule violet-black; beneath, with the veins and margins golden; cilia of all the wings blue-black. Male rather less; abdomen elongated, slender, its fourth segment above fulvous; below, and towards the apex, white: palpi also white beneath: tarsi beneath pale brownish.

Not a very abundant species, but the most frequent of the red-belted kinds; it is found occasionally in gardens near the metropolis, at Chelsea, Highgate, Hackney, Stratford, &c., and near Hertford and Ripley, in June. “Near Dublin.”—*N. A. Vigors, Esq.*

Sp. 8. Culiciformis. PLATE 10. f. 3. *Alis hyalinis anticarum marginibus fasciâque nigris, abdomine nigro, cingulo fulvo, palpis subtus fulvis.* (Exp alar. 10 lin. —1 unc.)

Sp. Culiciformis. *Linné.*—Æg. Culiciformis. *Steph. Catal.*

Blue-black: head with a snowy streak before the eyes: palpi above black, beneath rich orange: thorax glossy, immaculate; breast with a large lateral fulvous spot: abdomen shining, the fourth segment entirely fulvous, paler beneath; the caudal tuft immaculate: femora blue-black; tibiæ the same, with pale orange spines: tarsi lutescent, with the tips dusky: anterior wings above pale fulvous at the base, with the nervures, margins, and a transverse line blue-black; beneath with the transverse line violet-black, the margins pale fulvous; posterior, with the nervures, margins, and costal lunule black, the anterior margin beneath pale fulvous; fringe of all the wings dusky-black. Male differs in having the antennæ internally ciliated; the abdomen more attenuated, and in its smaller size.

Caterpillar dirty-white, with the head brownish: it feeds beneath the bark of the plum (*Prunus domesticus*), and the apple-tree (*Pyrus malus*). The chrysalis is brown.

Not common: I have taken it occasionally at Coombe and Darenth-woods in June, where it has also been captured by others. “Near Dublin.”—*N. A. Vigors, Esq.* “At Gravesend.”—*A. H. Davis, Esq.*

Sp. 9. Stomoxiformis. PLATE 11. f. 3. *Alis anticarum marginibus fasciâque nigris, thoracis lineis duabus abdominis barbati cingulo punctisque lateribus fulvis, palpis omnino nigris.* (Exp alar. 11½ lin.)

Sp. Stomoxiformis. *Hübner.*—Æg. Stomoxiformis. *Steph. Catal.*

Blue-black: head with a slender silvery line before the eyes: palpi totally black: thorax glossy, immaculate: breast with a fulvous patch anteriorly: abdomen shining, with the fourth segment above bright fulvous-orange, interrupted by a broad dusky-black line beneath; caudal tuft immaculate: femora blue-black; tibiæ the same, the anterior yellowish within; the spines black; tarsi blue-black above, yellowish beneath: anterior wings above, with the base, costa, nervures, a broad transverse line, and the apex, deep bluish-black; beneath, with the costa at the base, the margins of the discoidal line, and the space between the nervures at the apex (which are very broad, and dusky-blue) bright golden-fulvous; posterior, with the nervures, margin, and anterior lunule bluish-black; beneath the same, with the costa slightly margined with fulvous.

This interesting species has been hitherto unnoticed as a British insect, unless by the accidental employment of its name in the Entomological Transactions for the foregoing, which it resembles in size alone; its other characters, as may be readily seen, both by the accompanying figures and description, being essentially distinct. Upon a re-examination of my series of *Ægeriæ* I was fortunate enough to detect amongst them a single specimen, in beautiful condition, of *Æg. Stomoxyformis*, which I had formerly confounded with *Æg. Culiciformis*; though I am, from that circumstance, uncertain of its locality, which I presume to have been Darenth, as I am told by Mr. Chant, that he possesses a pair which he caught in that wood on the 10th July, 1825; and Mr. Davis informs me that he has a specimen which he found at Gravesend: but I have not yet seen either of their specimens.

Sp. 10. *Formiciformis*. PLATE 11. f. 4. *Alis hyalinis, anticis marginibus fasciâque nigris, apice fulvo, abdomine nigro, cingulo fulvo, barbâ abdominis lateribus albidis.* (Exp. alar. 8—10½ lin.)

Sp. *Formiciformis*. *Villars.*—*Æg. Formiciformis.* *Steph. Catal.*

Blue-black: head with silvery line before the eyes: palpi above black, beneath fulvous, antennæ black: thorax and breast shining, immaculate; abdomen glossy, the fourth segment entirely bright fulvous, the following with a few fulvous scales; the caudal tuft blue-black, with a narrow longitudinal white streak on each side: thighs blue-black; tibiæ yellowish, with a black ring, and yellowish white spines; tarsi blue-black, with a few yellowish hairs internally: anterior wings with the tip bright fulvous; the upper surface, with the nervures, margin, and a narrow transverse line, black; the costa fulvous at the base; beneath, with the anterior and inner margin, also fulvous; posterior on both sides, with the nervures, margins, and minute costal lunule, black: cilia of all the wings violet-black. Male less, the antennæ ciliated; the second and third segments of the abdomen with a few yellow scales, the fourth and fifth fulvous, with a black dorsal line.

Caterpillar whitish, with the head and tail brownish: it feeds on the inner substance of apple-trees, and, according to Hübner, on the *Salix alba*.

Decidedly rather uncommon, and evidently very local: it is taken in several places near the metropolis towards the middle of June. "I bred several specimens from an apple-tree growing at Little Chelsea, and have obtained the insect from Ireland."—*N. A. Vigors, Esq.* "From Lincolnshire."—*A. H. Davis, Esq.* "Near Limehouse."—*Mr. Stone*.

c. *Abdomen beltless.*

† Sp. 11. Ephemereformis. "*Antennis pectinatis, apice setaceis, ulis fenestratis venis fusco-lutescentibus, abdomine ezonato.*"—Haworth.

Sp. Ephemereformis.—Haworth.—Æg? Ephemereformis. *Steph. Catal.*

Size of a small Ephemera: antennæ pectinated, the tip setaceous; wings transparent, with yellowish-brown nervures: abdomen beltless.

"Found in Yorkshire by Mr. Bolton: formerly in the collection of Mr. Drury."—Haworth, *L. B.* 70.

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## ADDENDA ET CORRIGENDA.

Page 6. PAPILIO Machaon. "Plentiful throughout the fens between Ely and Cambridge. The first brood appears about the 3d, occasionally in the 2d, week of May; the second about the middle of July. I have several times found the larvæ, always on the marsh-milk parsley (*Selinum palustre*), which is undoubtedly the plant to which they are most attached, though in confinement they will feed readily on several other species of the Umbellatæ."—*Rev. L. Jenyns*.—I am informed by a lady residing at Deal, that this beautiful insect was taken last July in the larva state, on a carrot, near that town, and reared by her to the imago.

Page 6. PAPILIO Podalirius. In the fourth part of *Lepidoptera Britannica*, p. 588, Mr. Haworth alludes to the capture of this insect in the New-forest, as announced by my friend, Mr. Ingpen, in his very useful instructions for collecting insects; a fact that I did not state in the above page, as there appeared considerable mystery in the account which time has not yet cleared up. With respect to the other capture referred to by Mr. Haworth, the Rev. F. W. Hope, in a letter to me, says, "I have one specimen of Pa. Podalirius in my possession unset, and taken at Netley." Mr. J. O. Backhouse informed me that a resident of Newcastle has in his possession two specimens of this insect which he caught in a wood near Oxford; but from a more recent communication his account throws the usual suspicion on their authenticity.

Page 12. COLLAS Edusa. "A specimen of the female taken on the 23d instant, near Battle-bridge."—*Mr. Cole*.

Page 17. *PONTIA Chariclea*. My opinion respecting the distinction of this insect and *Po. Brassicæ* remains unshaken; although, from circumstances, I have been unable to investigate the subject so thoroughly as I hoped to have done last autumn by the rearing of specimens *ab ovo*. The Rev. W. T. Bree has, however, communicated to me an extensive series of *Pontia* captured by himself at Allesley, near Coventry, between the 28th April and 23d May last: now, of this series all those resembling *Po. Brassicæ*, taken prior to the 17th May, are unquestionably referable to *Po. Chariclea*; whereas one only of that insect was captured subsequently, and which is evidently a wasted example; while those of *Po. Brassicæ*, taken considerably later, are perfect: amongst the former are several varieties, some having the tips of the anterior wings deep black, others pale cinereous, and some clouded, as in the figure already given, with many intermediate shades; but *all* invariably have that part internally entire, as previously described. Again, the specimens vary much in size, some being fully as broad in expanse as *Po. Brassicæ*, others (and by far the generality) considerably smaller. The Rev. G. T. Rudd also favoured me with specimens, and sent me ten pupæ, which he found in that state during the winter: of these eight came to perfection previously to the 20th May (some as early as the 27th April), and each of the eight produced *Po. Chariclea*; whereas the other two, which came out subsequently, produced *Po. Brassicæ*. The pupæ of the former insect are less spotted with black than those of *Po. Brassicæ*, but in other respects they are similar.

The male of this insect has sometimes a small black spot on the upper surface of the anterior wings.

Since my former account of this genus was published I have obtained a copy of Albin's English Insects; and in his first plate he has not only, by singular chance it would appear, admirably depicted both sexes of *Po. Chariclea*; but his description evidently proves that such is the case, as he informs us that his insects made their appearance in the *middle of April*.

Page 19. *PONTIA Metra*. The specimens of this insect which I captured toward the end of June last season are evidently very old, and were the remains of a spring brood; and, from the observations I made after my preceding notice of this insect was printed off, I am of opinion that neither *Po. Chariclea* nor *Metra* are double-brooded, as I did not capture a single specimen of either in July and August last, although I took several hundred specimens for the sake of examination, all of which proved to be either *Po. Brassicæ* or *Rapæ*. Further than the above, other avocations have prevented me from pursuing my investigations: but the Rev. W. T. Bree also furnished me with several specimens of the "Small whites" (as they are termed), amongst the *Pontia* which he captured as before-stated; all of which appear referable to the *Po. Metra*, which is decidedly a most variable insect: the comparative slenderness and truncation of its anterior wings, and their dark base, sufficiently distinguish all the varieties from *Po. Rapæ*, with which the dark-tipped specimens might otherwise be confounded.

In addition to the above I may remark, that in examining the cabinet of Mr. Peck, I found that it contained an extensive series of *Po. Metra* alone, the

common *Po. Rapæ* being wanting; and, upon inquiry, I learnt that all his specimens had been caught in one day, in the beginning of April, which satisfactorily accounted for the deficiency, as *Po. Rapæ* does not appear till near the end of that month, or beginning of May. I may also add, that *Po. Metra* has long been known by the name of "Mr. Howard's White" amongst some of the older collectors, as I am informed by Mr. Hatchett.

One of the specimens sent to me by the Rev. W. T. Bree was caught so early as the 18th March last.

Page 23. *PONTIA Cardamines*. Of six pupæ of this species given to me by the Rev. J. Francis, two came to perfection at the end of May, one in the beginning, and one at the end of June, the other towards the middle of July; thus accounting for the long continuance of the insect in its final state.

Page 24. *LEUCOPHASIA Sinapis*. Fabricius asserts that the larvæ of this insect feed on the cabbage; not the authoress of the *Butterfly Collector's Vade Mecum*, who merely states, in the first edition of her work, that this insect and the three last (*Pontia Brassicæ*, *Rapæ*, and *Napi*), commit great havoc in our kitchen gardens. "Abundant in the New Forest in May last."—*Mr. Weaver*.

Page 25. *PIERIS*. I was misinformed by a friend respecting the use of this word as a generic term by Mr. Swainson, in his *Zoological Illustrations*, not having a copy of the work to refer to:—the three last lines must therefore be expunged.

Page 29. *NEMOBIUS Lucina*. "In Collingbourne-wood, near Andover."—*Rev. G. T. Rudd*. "New Forest."—*Mr. Weaver*.

Page 35. *MELITÆA Euphrosyne*. † *Var. c*, PLATE iv. f. 3. which is in Mr. Haworth's cabinet, I suspect may prove to be a variety of *Me. Selene*.

Page 38. *ARGYNNIS Adippe*.

† *Var. b*. "Primary (anterior) wings above nearly black, embrowned at the base; with a reddish, transverse, undulated spot near the base, and a largish print of the same colour between it and the middle; these spots are also conspicuous on the underside of the wing. This last side is fulvous, spotted with black; at the apex, near the margin, are four silver dots. The secondary (posterior) wings above are fulvous spotted with black, margin black, with a double series of fulvous streaks; underneath these wings are virescent, with twenty silver spots, namely, one, three, two, seven, and seven, in the margin; the four middle spots are the largest; besides these, the shoulder of the wing is edged with silver: fringe white: antennæ rather long, with a large clava. Expansion, 1 inch, 11 lines. Taken by Mr. Seaman, of Ipswich."—*Rev. W. Kirby*.

The above description so nearly accords with a fine specimen which was sent to me for examination by Mr. Weaver, that I have preferred giving that to making a new one from the insect in my possession, which is somewhat larger (Ex. 2 inch, 2 lin.): the anterior wings have a row of elongate tawny spots parallel with the hinder margin above, and only two obsolete silver spots be-

neath; the disc of this surface is nearly black: the posterior wings beneath have brownish clouds attached to several of the silvery spots; and four of the latter, of the second series from the margin, are tarnished with black. This, doubtless, is a variety of *Ar. Adippe*; and I suspect that Mr. Seaman's is also referable to that species, the only points required to identify it being a knowledge of the form of the anterior wings, and of the existence of the brown clouds on the posterior beneath.

Page 39. *ARGYNNIS* *Aglaiæ*. † Var.  $\gamma$ . This variety differs from the others by having the clava of the antennæ cylindric-conic instead of compressed, as well as by the variation in colour described in this page.

Page 43. *VANESSA* *Urticæ*. Mr. Doubleday kindly presented me with a singular monstrosity of this species, which he caught flying near Epping: the right posterior wing has a perfect additional wing, about one-third of the size of the original, arising from near the base of the costal arcolet; it is somewhat less angulated than the true wing, but its colours, both above and below, are very bright, and disposed as usual: the proper wing is a little defective on its anterior edge, and the nervure which bears the additional one is incrassated.

Page 44. *VANESSA* *Io*. "Common near Carlisle, and in Scotland."—*T. C. Heysham, Esq.*

Page 47. *CYNTHIA* *Cardui*. "A larva of this insect, which changed to pupa on the 1st October last, arrived to perfection on the 2d Nov. following."—*Mr. Raddon*.

Although not strictly applicable to our indigenous productions, I cannot refrain from referring to the *Annales des Sciences Naturelles* for March last, in which an extraordinary migration of this species is recorded to have taken place in May, 1827, in one of the cantons of Switzerland; the number of the insects being so prodigious, that they are said to have occupied several hours in passing over the spot where they were observed.

Page 52. *LIMENITIS* *Camilla*. "Lordship-lane, Camberwell, formerly in plenty."—*Mr. Witherington*.

Var. *è*. *Steph. Catal.* Wings above entirely dusky-brown, with a few paler spots, the white fascia completely obliterated; cilia white, spotted with brown; beneath, the anterior are of a bright tawny-brown, with an irregular black patch on the disc, intersected with pale tawny, and bordered towards the anal angle with two whitish spots; the hinder margin has a few whitish clouds towards the angle; posterior also tawny-brown, with the base and inner margin bluish-gray, the former spotted with black; the hinder margin with a few whitish spots, and one wing with a few towards the centre, in place of the band, which is completely obliterated on the other wing.

This variety is said, by the editor of the *Papillons d'Europe*, to have been taken in England.

Page 64. *HIPPARCHIA* *Iphis*. From recent information, kindly furnished to me by the Rev. W. T. Bree and J. Marshall, Esq., I am of opinion that this insect (which is unquestionably synonymous with pl. xxxv. f. 4. of Esper, but



*not with* pl. liii. f. 249—251. of Hübner, that being evidently a distinct species, with silvery pupils to the ocelli, &c.) and *Hi. Polydama* are identical, the latter being a mere variety of the other: and as the former appellation (which originated in the *Weiner Verzeichniß*, without any description,) has been successively applied to *Hi. Davus*, *Hero*, &c. by different authors, from the impossibility of deciding to which it ought strictly to be applied, I propose retaining *Mr. Haworth's* name of *Polydama* (notwithstanding its orthography) to the indigenous species, which *does not appear* to be described by the continental naturalists as a variety of *Hi. Davus*; the employment of the name *Typhon* in lieu of *Tiphon* being equally objectionable with that of *Iphis*.

Page 67. *HIPPARCHIA DAVUS*. “Caterpillar green, with three whitish stripes down each side, and a darker green line on the back: it feeds on the fox-tail grass.”—*Mr. Weaver*.

Page 68. *HIPPARCHIA HERO*. Of this insect *M. Ernst* says, “Ce papillon est tiré du cabinet de *M. Gigot d'Orey*. Il l'a reçu d'Angleterre, comme une espèce naturelle à ce royaume!” A curious fact, as there are certainly not more than two specimens which are supposed to have been caught in England, in the indigenous collections.

Page 75. *THECLA BETULÆ*. “Scarce near *Kimpton, Hants*.”—*Rev. G. T. Rudd*.

Page 76. *THECLA QUERCUS*. “Very abundant near *Kimpton, Hants*.”—*Rev. G. T. Rudd*.

Page 78. *THECLA RUBI*. “Occurs near *Kimpton*, but sparingly.”—*Rev. G. T. Rudd*.

Page 85. *POLYOMMATUS ARGIOLUS*. “Abundant near *Coventry* in *May* (I have seen it as early as the middle of *April*); with us it seems to be only single-brooded: its favourite holly abounds in this district.”—*Rev. W. T. Bree*. “Found also near *Darlington*.”—*Mr. J. O. Backhouse*. “*New Forest* in *May* last.”—*Mr. Weaver*.

Page 86. *POLYOMMATUS ALSUS*. “In great abundance near *Darlington*.”—*Mr. J. O. Backhouse*. “Near *Amesbury, Wilts*.”—*Rev. G. T. Rudd*. “Between *Woodstock* and *Enston, Oxon*; also in the *Isle of Wight*, and near *Cheltenham*.”—*Rev. W. T. Bree*.

Page 86. *POLYOMMATUS ACIS*. “At *Coleshill* in *Warwickshire*, and in *Leicestershire*.”—*Rev. W. T. Bree*.

Page 125. *DEILEPHILA GALII*. “A single specimen taken flying in a garden at *Islington* three years since.”—*Mr. J. Cole*.

I must not conclude my account of the Papilionaceous insects of Britain without alluding to the following, which are stated by *Engranelle* to have been captured in England; although both appear to be American; and, instead of being indigenous to this country, they are, I believe, natives of *New England*, in *North America*.

*Pontia Feronia*. *Alis albis, anticis margine postico sericeo maculis trigonis brunneis, subtus immaculatis, apice flavescens; posticis immaculatis, infra flavescens, hinc notatis.*

Po. Feronia. *Steph. Catal. Appendix, II.*

Wings above white; the anterior with a single row of triangular brown spots, touching the hinder margin, and terminating in a point on each nervure internally; beneath immaculate, the anterior white, with a yellowish tint on the outer angle; the posterior entirely of the latter colour, irrorated with dusky.—“Prise en Angleterre.”—*Papillons d'Europe, v. i. p. 209.* This is apparently an unnamed species: Godart, in the *Encyclopédie Methodique*, seems to have been aware of its distinction from Po. Brassicæ, from having properly restricted his references to Ernst's figures of this latter insect; but he has totally overlooked it in his account of the genus. Ochsenheimer appears to have fallen into the same mistake, or rather has omitted to notice the fact of a second species having been figured by Ernst, as usual with him under similar circumstances.

The second insect is a species of *Melitæa*: the *Papilio Tharos* of Cramer and Drury.

Me. Tharos. *Alis suprà fulvis lineis plurimis transversis limboque communi nigris; posticis utrinque ad externum strigâ punctorum nigrorum.*

Po. Tharos. *Cramer.—Drury, Ins. i. pl. 21. f. 5, 6.* Me. Tharos. *Steph. Catal. Appendix, II.*

Wings above tawny, with several transverse lines, and their margins black: the posterior on both sides with a row of black spots toward the hinder margin; beneath they are tawny-yellow, irregularly marked with dusky, with a whitish lunule near the middle of the outer edge.

“Le Papillon existe dans la collection de M. Gigot d'Orcy, qui l'a reçu d'Angleterre.”—*Papillons d'Europe, v. i. p. 66.* Although the above extract does not actually state this insect to have been taken in England, that fact is implied from the circumstance of the editor of the above work having introduced the figure and description thereof as a native of Europe, with the above as its only locality.

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## ERRATA.

- Page 2, last line but 1, for *Trochilum*, read *Trochilium*.  
 4, line 28, for or, read comprises.  
 — 30, read which correspond.  
 8, — 27, add *Go. Rhamni. Steph. Catal.*  
 18, — 26, for Derbyshire, read Warwickshire.  
 73, — 23, for these, read the.  
 92, — 39, for *glysyphyllus*, read *glycyphyllus*.

END OF VOLUME I.

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F. \_\_\_\_\_  
(Haustellata)  
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