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THE  
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BRITISH INSECTS;

EXPLAINING THEM  
IN THEIR SEVERAL STATES,  
WITH THE PERIODS OF THEIR TRANSFORMATIONS,  
THEIR FOOD, OECONOMY, &c.

TOGETHER WITH THE  
HISTORY OF SUCH MINUTE INSECTS  
AS REQUIRE INVESTIGATION BY THE MICROSCOPE.

THE WHOLE ILLUSTRATED BY  
COLOURED FIGURES,  
DESIGNED AND EXECUTED FROM LIVING SPECIMENS.

---

By E. DONOVAN.

---

V O L. VII.

---

L O N D O N :

PRINTED FOR THE AUTHOR,

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M D C C X C V I I I .

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THE  
NATURAL HISTORY  
OF  
BRITISH INSECTS.

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PLATE CCXVII.

PAPILIO HIPPOTHOE.

GREAT COPPER BUTTERFLY.

LEPIDOPTERA.

*GENERIC CHARACTER.*

Antennæ clubbed. Wings erect when at rest. Fly by day.

*SPECIFIC CHARACTER*

AND

*SYNONYMS.*

Wings intire, margin white. Underside ash colour, with numerous black eye-shaped spots.

PAPILIO HIPPOTHOE alis integris: margine albo, subtus cinereis: punctis ocellaribus numerosis. *Linn. Syst. Nat.* 2. 793. 254.

*Fab. Spec. Inf.—Ent. Syst.* 2. T. 3. p. 1. 309. 172.

*Degeer Inf.* 2. tab. 2.

*Roef. Inf.* 3. tab. 37. fig. 6. 7.

*Esp. pap. tab.* 38. fig. 1.

*Ernst, Inf. Europ.* 1. tab. 44. fig. 92. 93.

*Papilio Hippothoe* is the largest and rarest of that kind of Butterflies called *Coppers*, by English collectors of Insects. We have not heard that it has been taken in this country for some years past: our specimens were met with in Scotland.

The female is larger than the male; it has also a greater number of black spots on the wings.

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## P L A T E C C X V I I I .

## F I G . I .

## C I M E X G O N Y M E L A S .

BLACK-KNEE FIELD BUG.

HEMIPTERA.

*GENERIC CHARACTER.*

Rostrum inflected. Antennæ longer than the thorax. Back flat. Thorax margined.

*SPECIFIC CHARACTER.*

Brown. Abdomen red. Antennæ annulated with black. Knees of the same colour.

---

We consider this as a nondescript Insect. It was taken at Darent Wood, Kent, early in May.

---

## F I G . I I .

## C I M E X H A E M O R R H O I D A L I S .

HEMIPTERA.

C I M E X .

*SPECIFIC CHARACTER*

AND

*SYNONYMS.*

Greenish. Spines of the Thorax obtuse. Breast-piece terminate in a long spine. Antennæ black.

C I M E X

CIMEX HAEMORRHOIDALIS: thorace obtuse, spinoso subvirescens,  
antennis nigris, sterno porrecto. *Linn. Syst. Nat.*—  
*Fn. Sv.*—*Fab. Ent. Syst.* 4. p. 98. 76.

---

This Insect was found at the same time and place as the preceding species. It is the most elegantly coloured creature of its tribe we have hitherto found. *Cimex Luridus* is more beautiful in the larva, but not in the winged state.

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## P L A T E   C C X I X .

## P H A L Æ N A   P R O D R O M A R I A .

OAK-BEAUTY MOTH.

LEPIDOPTERA.

## G E N E R I C   C H A R A C T E R .

Antennæ setaceous. Wings in general deflexed, when at rest.  
Fly by night.

## S P E C I F I C   C H A R A C T E R

A N D

## S Y N O N Y M S .

Antennæ feathered. Wings white, speckled with numerous black spots. Two irregular, and nearly transverse bars of dark brown, on the upper wings.

P H A L Æ N A   P R O D R O M A R I A , pectinicornis alis albis nigro punctatis ;  
fasciis duabus latis fuscis. *Fab. Ent. Syst. T. 3. p. 1.*  
159. 105.

Phalæna Prodomaria. *Wien. Verz. 99. 1.*

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The larva of this Moth, like others of the *geometrae*, raises itself when walking, into the form of an arch or loop : it is of an obscure grey and brown colour, faintly mottled : the head is red. This larva is seldom taken, and when taken, is reared to the fly state with the utmost difficulty. It seems a local species ; for we  
have

have never heard that it has been found, except on the Oak trees\* in *Richmond Park*. It feeds on the highest branches of the trees, but descends into the earth to become a pupa. It appears in the fly state in March.

The male Insect is considerably smaller than the female. Its horns, or antennæ, are also larger, and more feathered. This is a scarce Insect. It is found in Germany; and a variety of it has been received from North America.

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\* It feeds also on Lime trees.





## P L A T E CCXX.

## PHRYGANEA RHOMBICA.

SPRING FLY.

NEUROPTERA.

## GENERIC CHARACTER.

Mouth furnished with four palpi. Antennæ longer than the Thorax. First Wings lay horizontally on the body. Under Wings folded, and concealed beneath.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Wings greyish brown. First pair marked with rhombic whitish spots.

PHRYGANEA RHOMBICA alis grifeis: macula laterali rhombica alba.

*Linn. Syst. Nat.—Fab. Ent. Syst. T. 4. p. 77. 13.*

*Roef. Inf. 2. Aqu. 2. tab. 16.*

*Schæff. Icon. tab. 99. fig. 5. 6.*

---

The Phryganea undergo their transformations in the water: in the larva state they are taken by the fishermen for bait; and, in some parts of Holland, are found so abundant, that they are used as a cheap manure for the land. In the larva state, they generally

rally form a sort of covering, or tube, for their defenceless bodies. It is open only at one end, at which its head and fore legs are protruded, to take its prey. Some species form these coverings of weeds and small shells, gravel, sand, &c. That of our present species, is composed of little pieces of the stalks of grass, cut into an even form, and laid transversely on each other. It attaches this tube to the roots of some aquatic plants, and undergoes its transformations in it. In the annexed plate, we have represented the larva taken from the tube, and the pupa having the tube opened to exhibit its situation therein.

The Fly is very common about ponds, rivers, and marshy places.







## P L A T E CCXXI.

## P H A L Æ N A M Y R T I L L I.

SCARCE BROAD BORDER YELLOW UNDERWING MOTH.

LEPIDOPTERA.

## G E N E R I C C H A R A C T E R.

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## S P E C I F I C C H A R A C T E R

AND

## S Y N O N Y M S.

Thorax crested. Wings deflexed, brown, spotted with white. Anterior wings yellow, with a deep black border.

P H A L Æ N A M Y R T I L L I *criftata* alis deflexis ferrugineis albo maculatis: posticis luteis, fascia lata submarginali nigra. *Lin. Syst. Nat.—Fab. Ent. Syst. T. 3. p. 2. 126. 379.*

---

A small Insect, but of singular beauty; it feeds on the whortle berry and floe.

This species has been taken by Mr. Crow, of Faversham. The only specimen we ever met with, was found in the caterpillar state, in Kent, in the month of May. The Fly came forth in June.

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LECTURE 10

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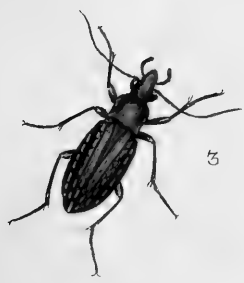
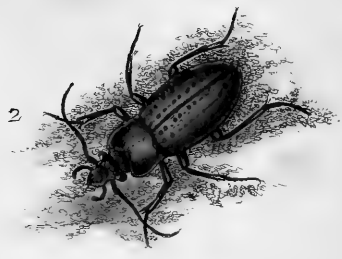
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LECTURE 10

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## P L A T E CCXXII.

## F I G. I.

## CARABUS VIOLACEUS.

COLEOPTERA.

## GENERIC CHARACTER.

Antennæ fetaceous. Thorax somewhat heart shaped, margined. Elytra margined also.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Apterous, black. Margin of the Thorax and Wing cases, glossy violet. Edges smooth.

CARABUS VIOLACEUS apterus niger thorace elytrorumque marginibus violaceis, elytris lævibus.—*Fab. Ent. Syst.* 1. 19. 125.

Carabus Violaceus. *Paykull Monogr.* 12. 4.  
*Frisch Inf.* 13. tab. 23.

---

The larva of some Carabi live in the ground, others in decayed wood. They prey on the smaller kinds of Insects. Fabricius describes one hundred and ninety-five species; a considerable number of these are natives of Europe. Carabus Violaceus is found in fields.

D

F I G.

## F I G . I I .

## C A R A B U S G E M M A T U S .

C O L E O P T E R A .

C A R A B U S .

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S .

Apterous, black. Wing cases marked with striæ; and three rows of indented double spots, bronzed.

CARABUS GEMMATUS apterus niger elytris striatis: punctis æneis bilobis excavatis triplice serie.—*Fab. Ent. Syst.* 1. 19. 127.

Carabus striatus.—*Degeer Inf.* 4. 90. 5. tab. 3. fig. 1.

Carabus gemmatus.—*Paykull Monogr.* 15. 6.

This species has commonly been mistaken for *Carabus hortensis*: the difference, however, between the two Insects, is considerable. The colour of the Beetle is black; but when not damaged, is entirely covered with a rich bronze, partaking of a green and golden hue on the wing cases, and a fine purple on the thorax: the under-side is plain black.

F I G .

## F I G. III.

## CARABUS GRANULATUS.

COLEOPTERA.

CARABUS.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Apterous, black, bronzed. Wing cases striated; three rows of elevated, or convexed-oblong spots, with an intermediate elevated line on each.

CARABUS GRANULATUS apterus nigricans elytris æneis striatis interiectis punctis elevatis longitudinalibus.—*Lin. Syst. Nat.*—*Fab. Ent. Syst.* 1. 130. 28.

Carabus granulatus.—*Paykull Monogr.* 19. 9.

*Degeer Inf.* 4. 88. 2.

*Sulz. Hist. Inf. tab.* 7. fig. 2.

*Schæff. Icon. tab.* 18. fig. 6. & *tab.* 15. 6. fig. 1.

---

Some authors say, this species is very common in the fields near London. It is often found in Battersea meadows; and we have not found it elsewhere.

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## P L A T E CCXXIII.

## F I G. I.

## P H A L Æ N A D E R A S A.

B U F F A R C H E S M O T H.

L E P I D O P T E R A.

## G E N E R I C C H A R A C T E R.

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## S P E C I F I C C H A R A C T E R.

A N D

## S Y N O N Y M S.

Crested. Wings deflexed. Anterior pair buff colour, with small arched markings.

NOCTUA DERASA: cristata, alis deflexis, anticis supra decorticatis:

*Fab. Syst. Ent.* 609 80.—*Spec. Inf.* 2. 229. 103.—

*Ent. Syst.* 3. p. 2. 85. 250.

Phalæna derafa. *Linn. Syst. Nat.* 2. 851. 158.

Phalæna pyritoides. *Naturf.* 2. tab. 1. fig. 7. (mas).

Borkhausen, *enr. Schmett.* 4. T. n. 281. p. 657.

Die Himbeereule. Der Wischflügel. *Panz. Faun. Inf. Germ.*

---

A rare species, is found in the Fly state early in August.

The larva of this phalæna is unknown to us, and has neither been figured or described in any of the entomological works recently published. The notes of Harris are not altogether satisfactory; he mentions the time of its changing from the caterpillar to the pupa, but has given no figure or description of either. The entomologists of Germany, where the phalæna is not scarce, seem unacquainted with its metamorphosis. Fabricius, the latest writer on the subject, has not described it.

## F I G. II.

## PHALÆNA TRAGOPOGINIS.

## GOAT'S-BEARD MOTH.

## LEPIDOPTERA.

## PHALÆNA.

## SPECIFIC CHARACTER

## AND

## SYNONYMS.

Anterior wings dark brown, with three black points or spots in the centre, posterior pair livid.

NOCTUA TRAGOPOGINIS: crista, alis deflexis, anticis fuscis, punctis nigris tribus approximatis, posticis lividis. *Fab. Syst. Ent.* 615. 107.—*Spec. Inf.* 2. 237.—*Ent. Syst.* 3. p. 2. 112. 336.

Phalæna Tragopoginis. *Lin. Syst. Nat.* 2. 855. 177.—*Fn. Sv.* 1189.

*Phalæna*

*Phalæna* antennis filiformibus, alis deflexis fuscis nitidis, punctis tribus centralibus nigris, capite flavo. *Degeer Inf. Verf. Germ.* 2. 1. 303. 10. tab. 7. fig. 15.

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Found on the Goat's beard, Spinach, and Docks.—Our specimen was taken in June.

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## F I G. III.

## P H A L Æ N A L I C H E N E S .

## L I V E R - W O R T M O T H .

## L E P I D O P T E R A .

## P H A L Æ N A .

## S P E C I F I C C H A R A C T E R

## A N D

## S Y N O N Y M S .

Thorax crested. Anterior wings green, with black marks. Posterior pair brown. Underfide brown.

**NOCTUA LICHENES:** cristata, alis deflexis: anticis viridibus, maculis variis atris, subtus fuscis. *Fab. Syst. Ent.* 614. 102.—*Spec. Inf.* 2. 235. 127.—*Ent. Syst.* 3. p. 2<sup>a</sup> p. 104. 312.

*Noctua glandifera.* *Wien. Verz.* 70. 2<sup>a</sup>.

We have found this species against walls on which the *Lichen fusco-ater* was growing. The larva is supposed to feed on plants of that genus. One specimen was found in October, another early in the spring, from which we conclude there must be two broods of them in the year.

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## P L A T E CCXXIV.

## P H A L Æ N A N U P T A.

RED UNDERWING MOTH.

LEPIDOPTERA.

## G E N E R I C C H A R A C T E R.

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## S P E C I F I C C H A R A C T E R

AND

## S Y N O N Y M S.

Thorax crested. Anterior wings greyish, varied with brown. Posterior pair red, with two broad black waves across. Abdomen hoary above, white beneath.

P H A L Æ N A N U P T A cristata alis planis cinerascens: posticis rubris; fasciis nigris, abdomine cano subtus albo. *Linn. Syst. Nat.* 2. 841. 119.  
*Wilks pap.* 33. tab. 1. a. 1.  
*Roef. Inf.* 1, phal. 2: tab. 15.

The larva of the Red Underwing Moth feeds on the willow: it is found in that state in June and July. The Fly appears in August, after having remained in the pupa state about twenty-one days.

Collectors of English Insects enumerate near twenty species of *Phalæna* under the trivial distinctions of *yellow underwing*, *copper underwing*, *orange underwing*, *pink underwing*, &c. &c. Among these the most conspicuous both for beauty and magnitude, are the *red underwing*, and *crimson underwing*. The first is by no means uncommon in the winged state. The latter is very rare, or at least a local species: it is found in the larva state on the tops of the highest oaks in Richmond Park, and was formerly found in similar situations in Burnt Wood, Essex. We are not informed that it has been taken in any other part of this kingdom.

These two species have been confounded with a third sort that is found in some parts of Europe, but does not, we have every reason to conclude, inhabit this country. This is the *Noctua Pacta* of Linnæus and Fabricius. Linnæus himself, in the first editions of the *Systema Natura*, considered the Red Underwing Moth, figured by Roefel, tab. 15, as the *Phalæna Pacta*, and adds it in his Synonyms; but it appears corrected in the later editions\*.

After that time, Harris, in his *Aurelian*, and other works, called the *Red Underwing* *Phalæna Pacta*, and the *Crimson Underwing* *Phalæna Nupta*. And Dr. Berkenhout, following Harris, or inattentive to the express language of the author he translated, has made the same error in his *Synopsis of the Natural History of Great Britain* †. Indeed, it may be doubted, whether any later English work on Insects has detected the error; for, examining a little tract of Mr. Matthew Martin, of the Bath Society, published in 1785, we find the Red Underwing called therein *Phalæna Pacta*.

To place our remarks in a clear point of view, we need only quote the descriptions of Linnæus:—"NOCTUA PACTA Cristata alis griseiscentibus subundatis: posticis rubris; fasciis duabus nigris. *Abdomine supra rubro.*" And again in the general description:

\* Corrected after 1759.

† Not corrected in the last edition.

" *Abdomen*

“*Abdomen supra roseum.*” Without adverting to the other characteristic marks, this proves that the Linnæan species of *Paeta* cannot be the same with that of the authors before quoted, because in their species the upper part of the abdomen is hoary, inclining to brown, and not red\*. Their *Phalæna Paeta* can be no other than the *Phalæna Nupta* of Linnæus and Fabricius; the precise species represented in our plate; of which Linnæus and Fabricius say: “*Habitat in Europæ Salice Vitellina;*” and of the *Phalæna Paeta* and *Sponsa*, “*Habitat in Europæ Quercu.*” The first lives on willows, the two others on oaks.

We close our remarks with observing, that the above quoted English authors have been no less mistaken as to *Phalæna Nupta*, which they have made the *Crimson Underwing Moth*. We have before expressed our doubt whether *Phalæna Paeta* has ever been found in this country;—we add, that the Insect, known to English collectors by the trivial name of *Crimson Underwing*, is the *Phalæna Sponsa* of Linnæus and Fabricius †, and consequently not connected in the least with *Phalæna Nupta*.

The readers of the works of Harris, Berkenhout, &c. are requested to read

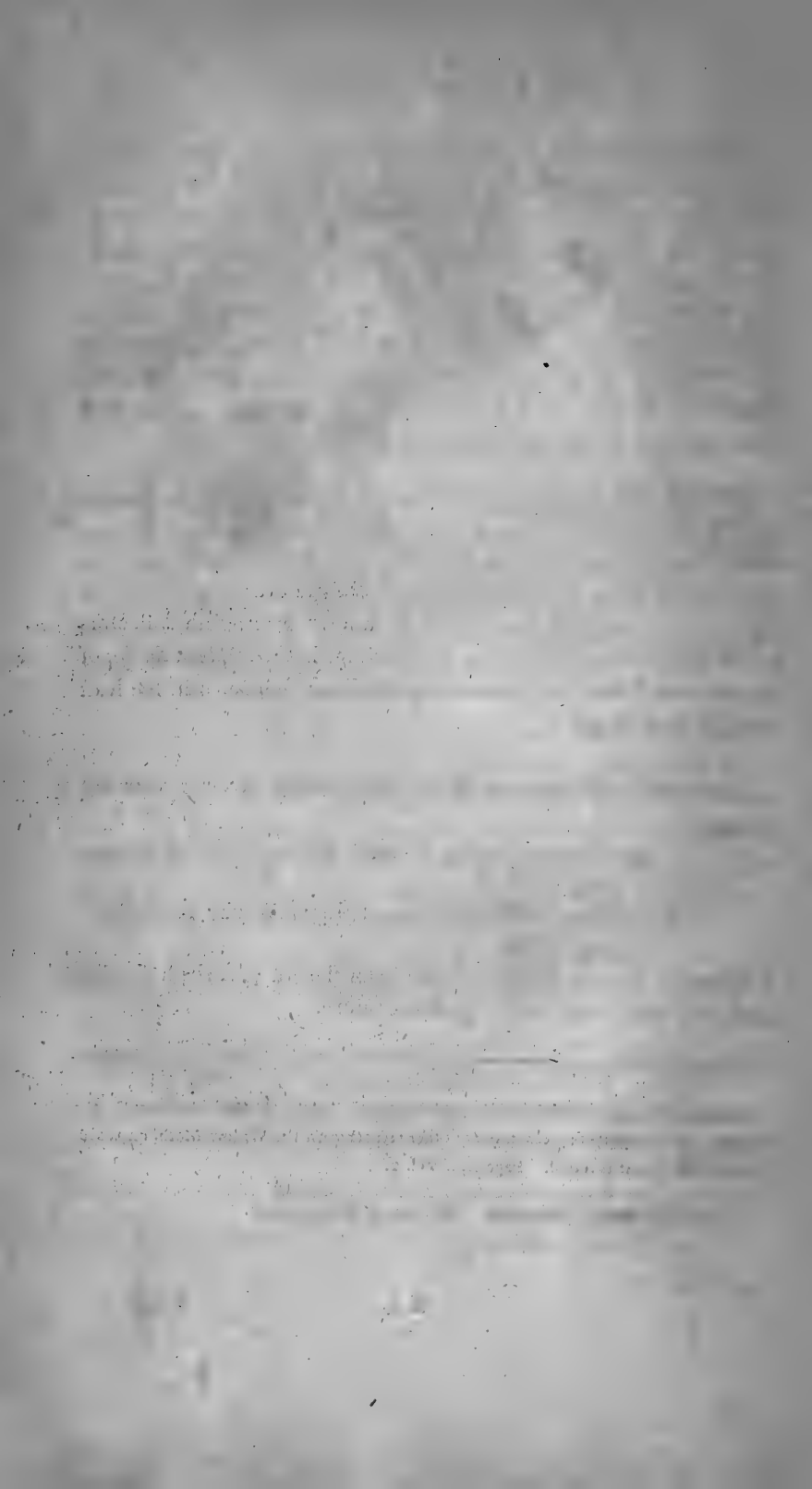
For *Phalæna Nupta*, *Phalæna Sponsa*, *Crimson Underwing Moth*.

For *Phalæna Paeta*, *Phalæna Nupta*, *Willow Red Underwing Moth*.

And finally, remove *Phalæna Paeta* from the list of British species, till it is proved to be a native of this country.

\* Berkenhout says the abdomen is reddish above; but by this he only increases the mistake; for his species agrees in every other respect with the *Willow Moth*, on which plant he also says it is found. Page 140. Vol. 1.

† Vide *Entomologia Systematica*. Vol. III. p. 2. p. 53. 147.



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## P L A T E CCXXV.

## S I R E X S P E C T R U M,

BLACK-BODIED TAILED WASP.

HYMENOPTERA.

Wings four, membraneous in general. Tail of the females armed with a sting.

## G E N E R I C C H A R A C T E R.

Mouth armed with strong jaws. Palpi two, truncated. Antennæ filiform, containing upwards of twenty-four articulations. Sting projected, strong, and ferrated.

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S.

Abdomen black. Thorax rather hairy, a yellow stripe on each side, next the base of the wing.

SIREX SPECTRUM: abdomine atro, thorace villosa, litura ante alas lutea. *Fab. Syst. Ent.* 3. 26.—*Spec. Inf.* 1. p. 419. 109. 6.

Sirex spectrum. *Lin. Syst. Nat.* 2. 929. 3.—*Fn. Sv.* 1574.—*Degeer. Inf.* 1. tab. 36. fig. 6.—*Schæff. Icon.* tab. 4. fig. 9. 10.

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This species bears much resemblance to some Insects of the Ichneumon genus. We have found it among the leaves of the Horseradish in June.

All the *frices* are rare in England. *Sirex spectrum* is an active and vigorous creature, and which cannot be taken without danger of its stinging. The sting is small, and fine as a needle, but formed of such hard or horny substance, that it will pierce the finger to the bone.



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## P L A T E   C C X X V I .

## V E S P A   V U L G A R I S .

C O M M O N   W A S P .

H Y M E N O P T E R A .

Wings 4, membranous in general. Tail of the female armed with a sting.

## G E N E R I C   C H A R A C T E R .

Mouth armed with jaws. The sting sharp-pointed and concealed within the abdomen. Body smooth, without hair. The upper wings folded.

## S P E C I F I C   C H A R A C T E R

A N D

## S Y N O N Y M S .

A yellow line on each side of the thorax : four yellow spots on the scutellum, a black belt, and two black spots on each segment of the abdomen.

*VESPA VULGARIS* : thorace utrinque lineola interrupta, Scutello qua quadrimaculato, abdominis incisuris punctis nigris distinctis. *Fab. Syst. Ent.* 364. 9.—*Spec. Inf.* 1. 460. 9.—*Lin. Syst. Nat.* 2. 949. 4.—*Fn. Sv.* 1671.

*Vespa nigra luteaque*, antennis totis nigris. *Degeer Inf.* 2. 2. III. tab. 26. fig. 7.

*Vespa* thōrace lineolis trium parium differentium flauves centium. *Geoff. Inf.* 2. 369, 2.

*Schæff.*

*Schæff. Elem. tab. 130.*

— *Icon. tab. 35. fig. 4.*

*Reaumur Inf. 6. tab. 12. fig. 7. 8.*

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Most kinds of Wasps live in societies ; and, like the bees, construct combs, in which they deposit their eggs, and rear their young. Some species are solitary, and each individual forms a nest for itself.

The common Wasp lives in societies : they collect the juices of fruits, insects, &c. and make honey, but it is inferior to that of bees. The metamorphosis of the wasps and bees are similar.

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## P L A T E   C C X X V I I .

## P H A L Æ N A   M O N A C H A .

BLACK ARCHES MOTH.

LEPIDOPTERA.

## G E N E R I C   C H A R A C T E R .

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## S P E C I F I C   C H A R A C T E R

A N D

## S Y N O N Y M S .

Wings deflexed, white, with black arches. Abdomen red.

P H A L Æ N A   M O N A C H A : alis deflexis albis atro undatis, abdominis incifuris sanguineis. *Lin. Syst. Nat.* 2. 821. 43.—  
*Fn. Sv.* 1130.—*Fab. Ent. Syst. T.* 3. p. 1. 446. 119.  
*Wien. Verz.* 52. 5.  
*Wilks pap.* 19. tab. 3. a. 4.  
*Schæff. Icon.* tab. 68. fig. 2, 3.

We have in few instances been able to present a species of Phalæna, with all its metamorphosis, more deserving attention than the Black Arches Moth. It is uncommonly rare in the winged state, and its larva and pupa is, we presume, unknown to the English Entomologists at this time. We imagine Harris met with, and bred  
 this

this Insect, though he has not figured it : he says it fed on the Oak, that it changed into chrysalis June 9th, and appeared in the winged state July 9th, which is very near the time of our specimen changing.

The larva is rather a general feeder ; for though Harris mentions only Oak, we found that it would not refuse the leaves of fruit-trees, such as Apples, Pears, &c. ; it feeds also on the Willow and Sallow. The female is larger than the male, and has antennæ like bristles.



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## P L A T E CCXXVIII.

## SPHINX CONVULVULI.

BIND-WEED HAWK MOTH.

LEPIDOPTERA.

## GENERIC CHARACTER.

Antennæ thickest in the middle. Wings, when at rest, deflexed. Fly slow, morning and evening only.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

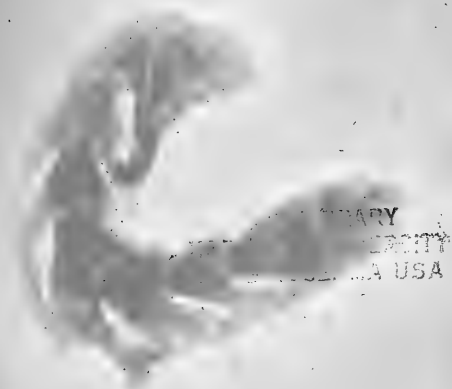
Wings entire, clouded. Posterior pair marked with zigzag transverse bands. Abdomen belted with alternate marks of red, black and white.

SPHINX CONVULVULI: alis integris nebulosis: posticis subfasciatis, abdomine cingulis rubris atris albisque. *Linn. Syst. Nat.* 2. 798. 6.—*Fab. Ent. Syst.* I. 2. p. 1. 374. 54.  
*Geoff. In.* 2. 86. 9.  
*Roef. Phal.* 1. tab. 7.  
*Sepp. Inf.* 3. 19. tab. 4.  
*Merian. Europ.* 39. tab. 75. fig. 2.  
*Cramer Inf.* 19. tab. 225. fig. D.  
*Welks pap.* 10. tab. 1. 6. 2.  
*Esp. Inf.* 2. tab. 5.  
*Drury Inf.* 1. tab. 25. fig. 4.

This

This is the largest of the Hawk Moths that inhabits Great-Britain, except *Sphinx ligustri* and *Sphinx Atropos*. It is rarely taken in this country; the curious in English Insects have them from Germany, where they are more common than with us.

A beautiful variety of this Insect is found in North-America: the wings are more richly varied with different shades of bright browns than the European kind; the posterior wings are of a fine rose-colour. It has all the characteristic marks of *Sphinx Convolvuli*, or we should hesitate to admit it as the same species. We received it from Mr. Abbot, in whose folio work it is also figured; he found it on the Wild Vine. Mr. Drury had the same variety sent to him from St. Christopher's.



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## P L A T E CCXXIX.

THE  
 LARVA AND PUPA  
 OF  
 SPHINX CONVULVI,  
 OR  
 BIND WEED HAWK MOTH.

---

After much research, we have not been so fortunate as to meet with the Larva of this rare Insect; nor can we learn that it has been taken by any Collector of English Insects for many years. In the winged state one Specimen was said to be taken in the fields near Hoxton about two years ago.

To perfect the History of this species, we have copied the Figures of the Caterpillar and Pupa, from N<sup>o</sup> 7, *Der Nacht-Voegel*, &c. &c. of Roefel's *Insecten-Belustigung*, Vol. I.

Our readers will observe that the Fly produced from the Caterpillars represented by Roefel is nearly one-third larger than the specimens supposed to be bred in England; the Caterpillars must therefore be larger in the same proportion in the specimens found in Germany.—The Caterpillars are of two colours, one green with stripes of yellow and spots of black; The other dull brown with ochre coloured stripes, and sides of the same. The Caterpillar figured by Abbot has a rose-coloured band on the side.





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## P L A T E CCXXX.

. F I G. I.

P H A L Æ N A M A U R A.

O L D L A D Y M O T H.

L E P I D O P T E R A.

G E N E R I C C H A R A C T E R.

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

S P E C I F I C C H A R A C T E R

A N D

S Y N O N Y M S.

Thorax crested, Wings incumbent, exterior margins dentated, ash-colour, varied with large spaces of black. On the underfide a deep whitish border.

NOCTUA MAURA cristata, alis incumbentibus dentatis, cinereo nigroque variis, subtus margine albo. *Fab. Syst. Ent.* 604. 61.—*Spec. Inf.* 2. 224. 81.—*Ent. Syst.* 3. p. 2. 63. 174.

*Phalæna maura* spirilinguis cristata, alis depressis dentatis, fasciis duabus nigris, inferioribus nigris, fascia alba. *Linn. Syst. Nat.* 2. 843. 124.

Phalæna Lemur *Naturf.* 6. tab. 5. fig. 1.  
*Shæff. Icon.* tab. 1. fig. 5. 6.

---

This grave Moth appears in the month of August: it frequents old houses in evenings.—From its dingy appearance it is usually called the Old Lady.

## F I G. II.

## P H A L Æ N A L U C I P A R A.

S C A R C E A N G L E S H A D E S M O T H.

L E P I D O P T E R A.

P H A L Æ N A.

## S P E C I F I C C H A R A C T E R

A N D

S Y N O N Y M S.

Crested. Wings deflexed, greyish, with angular dark marks. An angular light coloured space on the exterior part of the Wing, and a pale band across the middle of each.

NOCTUA LUCIPARA cristata, alis deflexis cinereo nitidis, fascia media lata fusca. *Fab. Spe. Inf.* 2. 233. 121.—  
*Ent. Syst.* 3. p. 2. p. 99. 244.

*Phalæna lucipara* spirilinguis cristata, alis purpurascens lucidis, fascia nigra, stigmatе postico flavo. *Linn. Syst. Nat.* 2. 857. 187.—*Fn. Sv.* 1201.

The common Angle-shades Moth, (*Phalæna Meticulosa*) is figured in a former part of this Work. *Phalæna Lucipara* is an Insect nearly allied to it, but is far more scarce; we have only met with the Specimen figured in the annexed Plate.—The Larva is supposed to feed on the internal substance of Willows. The Fly has also been observed among those trees.

10  
11



## P L A T E CCXXXI.

## F I G. I. I.

## ATTELABUS APIARIUS.

## COLEOPTERA.

## GENERIC CHARACTER.

Antennæ thickest towards the apex. Head protruded, broad, tapering towards the thorax. Four joints in each foot.

## SPECIFIC CHARACTER

## AND

## SYNONYMS.

Bright blue: rather hairy. Wing cases red, with three bars of blue: the third, at the termination of the apex.

ATTELABUS APIARIUS: *Lin. Syst. Nat.* 2. 620. 10.

CLERUS APIARIUS: subnudus cyaneus elytris rubris: fasciis tribus cœrulescentibus: tertia terminali.—*Geoff. Inf.* 1. 304. 1. tab. 5. fig. 4.—*Fab. Ent. Syst.* 1. 209. 14. *Degeer. Inf.* 5. 157. 1. tab. 5. fig. 3. *Sulz. Inf. tab.* 4. fig. 6.

---

A very local species: we learn that it has been found near Manchester.

## F I G. II.

## ATTELABUS FORMICARIUS.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Black. Thorax red. Wing cafes, with two bars of white :  
base red.

ATTELABUS FORMICARIUS: *Linn. Syst. Nat.* 2. 620. 8.

Clerus formicarius. *Fab. Ent. Syst.* 1. p. 207. 27. 5.

— niger thorace rufo, elytris fascia duplici alba basique rubris.

*Degeer. Inf.* 5. 160. 3. t. 5. f. 8.

Only a few species of this genus have been discovered in this country; and neither of those are very common. We apprehend *Attelabus Formicarius* is rare, having only met with one specimen of it. It was found in May, on a sand-bank, near Coome Wood, Surry.

## F I G. III. III.

## DERMESTES PELLIO.

## GENERIC CHARACTER.

Antennæ terminated in a perfoliated club: the three extreme articulations thicker than the rest. Thorax convex: scarcely margined. Head bent in; and almost concealed under the thorax.

SPECIFIC



## SPECIFIC CHARACTER

AND

## SYNONYMS.

Black. A white spot on each wing-case.

DERMESTES PELLIO : niger elytris puncto albo. *Lin. Syst. Nat.*  
2. 563.—*Fn. Sv.* 411.

DERMESTES PELLIO. *Fab. Ent. Syst.* 1. p. 228. 5.  
*Oliv. Inf.* 2. 9. 11. 10. *tab.* 2. *fig.* 11.  
*Schæff. Icon.* *tab.* 42. *fig.* 4.

---

A very common and destructive creature. It insinuates itself into all kinds of fur, or the dried skins of animals; and in the state of larva, injures them considerably. The larvæ of this tribe of Insects are numerous where they are suffered to breed: they enter into and destroy furniture, cloathing, and even food. Some species are found upon the carcases of animals; while others, more tenacious of life, penetrate harder substances, and resist the camphor, verdigrease, musk, arsenic, and other drying or corroding substances, that prevent the depredations of most Insects. One or two species are in particular much to be dreaded by Collectors of Natural Curiosities: they perforate the cabinet, or case, and when the larva is hatched, effect their destruction. In collections of animals, birds, insects, and plants, they do great mischief.

## F I G IV. IV.

## DERMESTES SCARABÆOIDES.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Ovated. Black. Two red spots on the wing-cases.

DERMESTES SCARABÆOIDES. *Linn. Syst. Nat.* 2. 563. 17.—  
*Fn. Sv.* 428.

SPHÆRIDIVM SCARABÆOIDES: ovatum atrum elytris maculis  
duabus ferrugineis. *Fab. Ent. Syst.* 1. 77. 6. 1.

---

Found in dung. Fabricius separates this species from the Dermestides, and places it in a new genus *Sphæridium*.

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HARDWARE  
CALIFORNIA & USA



## P L A T E C C X X X I I .

## P H A L Æ N A Q U E R C I F O L I A .

LAPPET MOTH.

LEPIDOPTERA.

## G E N E R I C C H A R A C T E R .

Antennæ taper from the base. Wings, in general, deflexed when at rest. Fly by night.

*Bombyx*—*Alis reversis*.

## S P E C I F I C C H A R A C T E R

AND

## S Y N O N Y M S .

Wings reversed, scalloped, red brown, with transverse wavy lines.

P H A L Æ N A Q U E R C I F O L I A : *alis reversis dentatis ferrugineis, ore tibiisque nigris.* *Linn. Syst. Nat.* 2. 812. 18.

*Fn. Sv.* 1110.

B O M B Y X Q U E R C I F O L I A . *Fab. Ent. Syst. T.* 3. p. 1. 420. 42.

*Roes. Inf.* 1. *Phal.* 2. tab. 41.

*Schæff. Icon. tab.* 71. fig. 45.

*Merian Europ. tab.* 1. fig. 3.

*Reaum. Inf.* 2. tab. 23.

*Sulz. Inf. tab.* 16. fig. 93.

*Albin. Inf.* 1. tab. 16.

*Phalæna Quercifolia* is a rare and interesting Insect, and is the largest of the English bombyces, if we follow the arrangement of the *Entomologia Systematica* of Fabricius, and remove the Linnæan *Bombyx Cossus*\* to a new genus †.

The trivial name Lappet Moth has been given to this species by some early Collectors of English Insects, because they observed, when the creature was at rest, and the wings expanded in a natural position, the anterior part of the second pair *lapped* over the first, instead of the first pair laying on the second, as in many other species of *Phalæna*. This appearance is very striking, but not peculiar to *Phalæna Quercifolia*. *Bombyces*, with similar reversed wings, are numerous, and several of them natives of this country; as *Phal. Quercus*, and *Potatoria*.

In a former volume we have given The Pine Lappet Moth; an Insect that is extremely uncommon in Great-Britain; that, with the present species, are the only two British *Phalæna* called Lappet Moths; another Insect, closely allied to *P. Quercifolia*, and supposed to be the *Phal. Populifolia*, is said to be an English Insect, but on what authority, we are not informed. The very different appearances of the larva of *Phal. Quercifolia* in different stages of its growth, may possibly have caused some mistake; for in one skin they are brown, with whitish marks; in another greyish, with dark brown marks; and when of a full size, are more inclined to brown and grey in some specimens than in others. Notwithstanding, however, the variation of colours, in all its changes, we find that the two oval blue marks on the second and third segment of the body are constant, and sufficient to determine the species. The larva of *Bombyx Populifolia* is very similar to that of *B. Quercifolia*, when young, if we may judge by the only figure of it extant, but the mark across the second segment is narrow and black; that on the third segment broader, with two semi-lunated red spots.—*Vide Kleeman's Beytraege, &c. Vol. 3. tab. 14.*

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\* Goat Moth.

† *Cossus ligniperda*.—*Fab.*

The larva of *P. Quercifolia* we have taken in Darent Wood, Kent, on the grafs; it feeds alfo on Willow, Blackthorn, and Whitethorn. At the end of April, or not later than May, it forms a large and loofe spinning interwoven with its hairs, of black, reddifh, and grey colours. The pupa is black, but appears perfectly white, being covered with a fine white pollen, or powder; each fegment is encircled by a belt, of a red colour. In July and Auguft it is found in the Fly ftate,

# REPORT

The following report was prepared by the committee on the subject of the proposed changes in the curriculum of the school. The committee has held several meetings and has received many suggestions from the teachers and the parents. It is now pleased to submit this report to the board of trustees.

The committee has found that the present curriculum is not in line with the needs of the community. It is necessary to make certain changes in order to provide a better education for our children. The proposed changes are as follows:

- 1. The addition of a course in civics and government.
- 2. The addition of a course in history.
- 3. The addition of a course in science.
- 4. The addition of a course in art.
- 5. The addition of a course in music.
- 6. The addition of a course in physical education.
- 7. The addition of a course in foreign languages.
- 8. The addition of a course in vocational training.

The committee believes that these changes will greatly improve the quality of the education provided by the school. It is recommended that the board of trustees approve these changes and that the necessary steps be taken to implement them.



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## P L A T E    C C X X X I I I .

## P H A L Æ N A   P R U N A R I A .

P H O E N I X   M O T H .

L E P I D O P T E R A .

## G E N E R I C   C H A R A C T E R .

Antennæ taper from the base. Wings in general deflexed when at rest. Fly in the night.

*Geometra.*

## S P E C I F I C   C H A R A C T E R

A N D

## S Y N O N Y M S .

Antennæ like a bristle. First pair of wings brown and grey, with two broad pale waved marks across. Second pair, with waves on the posterior part.

P H A L Æ N A   P R U N A R I A : feticornis alis griseo fuscis: fasciis duabus pallidis repandis: postica semiterminali. *Linn. Syst. Nat.* 2. 869. 250.—*Fn. Sv.* 1267.—*Fab. Ent. Syst.* 3. p. 2. p. 178. 175.

*Wien. Verz.* 113. 19.*Clerk. Pkal. tab.* 7. fig. 3.*Ammiral Inf. tab.* 23. fig. 1. 4.

---

Fabricius describes the larva of this rare Moth:—It is ash-coloured, with a black collar or mark on the neck: feet reddish brown, and the back spotted with the same colour.

The

The trivial English name, Phoenix Moth, has been given to this Insect from a circumstance little known, and scarcely deserving notice, except as it proves the impropriety of naming Insects from local circumstances, when any other can be well applied. A small part of a wood near London had been cut down, and a quantity of charcoal made on the spot. This place had been often visited by Aurelians, but the *Phalæna Prunaria* had never been discovered there, nor indeed was then known as a British Insect. On the following year, when the ground was cleared, and the underwood grown up, this Moth was found, it continued to be taken constantly in the months of June and July for many years, in this place, and then totally disappeared. The late Mr. Bentley, known as a collector of English Insects, discovered a breeding-place of this Moth on Epping Forest, and commonly found three or four specimens every season. We are not certain that it has been found in any other part of the kingdom. It feeds on the thorn, plumb and currant.

---

## F I G. II. II.

## P H A L Æ N A D U P L I C A T A.

## S P E C I F I C C H A R A C T E R

AND

## S Y N O N Y M S.

First wings grey, with three transverse waved lines.

P H A L Æ N A D U P L I C A T A : feticornis, alis griseis, fasciis duabus trilineatis fuscis. *Fab. Ent. Syst.* 3. p. 2. p. 193. 234.

P H A L Æ N A P L A G I A T A : feticornis, alis anticis canis : fasciis tribus trilineatis nigricantibus repandis. *Linn. Syst. Nat.*—  
*Fn. Sv.* p. 334. n. 1271.

Phal.

Phal. Plagiata. Das doppelte Band. *Berlin. Mag.* 4. B. p. 522.  
n. 38.

*Schæff. Icon., tab.* 12. fig. 1. 2.

*Clerk. Icon. tab.* 6. fig. 1.

*Roffi Faun. Etr. T.* 2. p. 194. n. 1175.

Found in June. It is rare, and we believe has not been met with in the state of larva in this country. Foreign authors say the larva is brown, variegated with red, and has a yellow line on each side. *Kleemann* has not figured the larva with the Moth in his Supplement of the rare Insects found in Germany.

## F I G. III.

## P H A L Æ N A V E S P E R T A R I A.

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S.

Antennæ feathered. Wings yellowish: two dark waved streaks across the first pair; one on the second pair: the space between the streaks and margins of the wings, dark.

P H A L Æ N A V E S P E R T A R I A pectinicornis alis flavescens: strigis duabus; posteriore limbum obscurum determinante.

*Linn. Syst. Nat.* 2. 864. 224.

*Fab. Ent. Syst.* 3. p. 2. 149. 74.

Phalæna parallelaria. *Wien. Verz.* 104. 15.

Found in Hornsey-Wood in July, and also in Norwood.

F I G.

## F I G. IV.

## P H A L Æ N A C H Æ R O P H Y L L A T A.

G R E A T C H I M N E Y - S W E E P E R.

## S P E C I F I C C H A R A C T E R

A N D

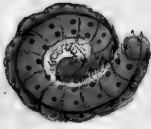
## S Y N O N Y M S.

Antennæ like a bristle: Wings black erect: first pair white at the tips.

P H A L Æ N A C H Æ R O P H Y L L A T A *feticornis atra alis erectis: anticis apice albis.* *Linn. Syst. Nat.* 866. 237.—*Fab. Ent. Syst.* I. 3. p. 2. 184. 200.  
*Wien. Verz.* 116. 1.

Appears in the Winged state late in July. Is produced from a reed capillar, which feeds on *Cherophyllum Silvestre*, or wild cicely.

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## P L A T E   C C X X I V .

## TENTHREDO LUTEA.

YELLOW SAW-FLY.

HYMENOPTERA.

Wings four, generally membranous. Tail of the females armed with a sting.

## GENERIC CHARACTER.

Without proboscis. Mouth armed with jaws. Sting composed of two laminæ, dentated, like a saw, and almost concealed within the abdomen. Two tubercles on the scutellum.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Antennæ clubbed, yellow. Abdomen yellow, except the second segment, which is black.

TENTHREDO LUTEA: antennis clavatis luteis, abdominis segmentis plerisque flavis. *Linn. Syst. Nat.* 2. 921. 3.—*Fn. Sv.* 1534.

*Fab. Ent. Syst.* 1. 2. p. 105. 138. 3.

*Roef. Inf.* 2. *Vesp. tab.* 13.

*Schæff. Icon. tab.* 103. *fig.* 2. 3.

*Degeer Inf.* 2. 2. 223. 7. *tab.* 33. *fig.* 8. 16.

G

Very

Very uncommon in this country. The larva has been found on the Willow, but unless taken when ready to become a pupa, it is impossible to rear it to the winged state. We are little acquainted with the peculiar habits of these Insects, and cannot therefore feed them in a proper manner.

Most of the Tenthredines enshroud themselves in a net-work covering, and remain in the earth till the Fly bursts forth; others fasten the web against the branches of trees, or on the trunk near the earth. The habits of *Tenthredo lutea* are very similar to those of *T. Vitellinæ*; the winged Insect appears in June,

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## P L A T E    C C X X X V .

## C H R Y S I S   C Y A N E A .

## H Y M E N O P T E R A .

Wings four: generally membraneous. Tail of the females armed with a sting.

## G E N E R I C   C H A R A C T E R .

No proboscis. Armed with jaws. Antennæ filiform.

## S P E C I F I C   C H A R A C T E R

A N D

## S Y N O N Y M S .

Very glossy blue green. End of the abdomen furnished with three teeth.

C H R Y S I S   C Y A N E A : glabra nitens thorace abdominisque cœruleis, ano tridentato. *Linn. Syst. Nat.* 2. 948. 5.—*Fn. Sv.* 1667.

*Fab. Ent. Syst.* 2. 147. p. 243. 20.

*Vespa cœrulea nitens.* *Geoff. Inf.* 2. 484. 23.—*Schæff. Icon. tab.* 81. fig. 5.

The natural size of this Insect is given at Fig. I. in the annexed plate. It is far inferior in beauty to either *Chrysis ignita* or *bidentata*, figured in the early part of this work; but as the genus is very limited, we have a given figure of this species. It is very abundant on all kinds of fruit-trees in the summer.

P L A T E

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 1000

BY

ROBERT M. HAYES

AND

WILLIAM R. HAYES

Submitted in partial fulfillment of the requirements for the Ph.D. degree

to the Graduate Faculty of the University of Chicago

in the Department of Chemistry

Chicago, Illinois

1955

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Printed in the United States of America

Library of Congress Catalog Card No. 55-1000

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## P L A T E C C X X X V I .

F I G . I . I .

P A P I L I O C O R Y D O N .

C H A L K - H I L L B L U E B U T T E R F L Y .

G E N E R I C C H A R A C T E R .

Antennæ clubbed. Wings erect when at rest. Fly by day.

S P E C I F I C C H A R A C T E R

A N D

S Y N O N Y M S .

Wings entire, above silvery or pale blue, with a black margin. Beneath grey, with eye-shaped spots.

HESPERIA CORYDON: alis integris cœruleo argenteis: margine nigro, subtus cinereis: punctis ocellaribus, posticis macula centrali alba. *Fab. Ent. Syst.* 3. p. 1. p. 298.

133.

PAPILIO CORYDON. *Wien. Verz.* 184. 10.

PAPILIO CORYDON. *Esp. pap. tab.* 33. fig. 4.

PAPILIO TIPHYS. *Esp. pap. tab.* 51. fig. 4.

Found on the chalk-hills between Dartford and Rochester; particularly on a long range of hillocks leading from Dartford to the wood of Darent. Hence the Butterfly has been called the Chalk-hill blue. We believe it has not been found in any other part near London. The larva is unknown, it appears in the winged state, the first and second week in July.

H

F I G .

## F I G. II. II.

## P A P I L I O L I N E A.

S M A L L S K I P P E R B U T T E R F L Y.

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S.

Wings entire, brown, divaricated, margin black.—An oblique black mark on the anterior wings.

HESPERIA LINEA: alis integerrimis divaricatis fulvis: margine nigro. *Fab. Ent. Syst.* 3. p. 1. 326.

PAPILIO LINEA. *Wien. Verz.* 159. 5.

PAPILIO THAUMAS. *Esp. pap. tab.* 36. fig. 2. 3.

PAPILIO SYLVESTRIS. *Pod. Mus.*

---

A very generally diffused species, but not common; it is similar to the *Papilio Sylvanus* of Linnæus, or *Hesperia Sylvanus* of Fabricius, which is found in the greatest abundance in the skirts of woods in summer. Its metamorphose is unknown.

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## P L A T E CCXXXVII.

## PHALÆNA BETULARIA.

PEPPERED MOTH.

## GENERIC CHARACTER.

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Antennæ feathered. Wings entirely white, speckled with black; a black bar across the thorax.

PHALÆNA BETULARIA: pectinicornis, alis omnibus albis, thorace fascia nigra, antennis apice setaceis. *Linn. Syst. Nat.* 2. 862. 217. *Fn. Sv.* 1287.  
*Fab. Spec. Inf.* 2. 252. 56.

PHALÆNA antennis pectinatis, alis horizontalibus albis nigro punctatis maculatisque, thorace fasciato. *Degeer. Inf. Verz. Germ.* 2. 1. 250. 1 tab. 5. fig. 18.  
*Ammiral. Inf. tab.* 21.  
*Schæff. Icon. tab.* 88. fig. 4. 5.  
*Albin. Inf. tab.* 91, 92.  
*Kleman. Inf.* 1. tab. 39. fig. 6.

Found on the Lime, Willow, and Elm in the state of Larva, changes to the Pupa in September; and the Moth appears in May. The Larva of this creature differ very much in their shades of colour; they are generally blackish or dark olive with a few obscure red spots.

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P L A T E   C C X X X V I I I .

F I G . I . I .

P A P I L I O   H Y A L E .

C L O U D E D   Y E L L O W   B U T T E R F L Y .

L E P I D O P T E R A .

G E N E R I C   C H A R A C T E R .

Antennæ clubbed.   Wings erect when at rest.   Fly by day.

S P E C I F I C   C H A R A C T E R

A N D

S Y N O N Y M S .

Wings rounded, yellow : an orange spot on the posterior wings : beneath, a large silver spot, with a small contiguous spot of the same.

P A P I L I O   H Y A L E : alis rotundatis flavis : posticis macula fulva ;  
subtus puncto sesquialtero argentes.   *Linn. Syst. Nat.*  
2. 764. 100.

---

Though we cannot but admire the Linnæan definitions, for their perspicuity in general ; we must in some instances blame him for that inattention which has betrayed succeeding naturalists into errors,

and even absurdities. The force of this remark, however harsh it may appear, will apply in a particular degree to the specific definition and quoted Synonyms of *Papilio Hyale*, and consequently to two other similar species involved in the same error.

Linnæus gave the description of *Papilio Hyale*, as above quoted in the *Systema Natura*; from an insect in his own cabinet, and quotes, in the Synonyms, the Butterfly figured by *Roefel*, *Vol. 3. tab. 46. fig. 4. 5.* The works of that author being known in every part of Europe, the entomologists of that time received the figure as that of the true *Hyale*; and relying on the accuracy of the Linnæan references, the mistake has been overlooked to the present period. Fabricius, who is the latest systematic writer on this science, quotes the figures in *Roefel*, as Linnæus had himself in the first instance; and he also refers to figures of the same insect in the works of *Cramer* and *Schæffer*. An error of such specious appearance could only be detected by a reference to the specimen in the Linnæan Cabinet, at this time in the possession of *Dr. Smith*, and by this it appears that every author has mistaken the species of Linnæus, and that Linnæus was himself mistaken in supposing the insect described was the same as that figured by *Roefel*, and to which he refers: that the Linnæan *Papilio Hyale* is what later authors have considered *Papilio Palæno*, and that the true *Papilio Palæno* is not a British species.

These errors are so complicated that we must examine the characters assigned to each species with the utmost attention, and we shall then find his descriptions correct, but the synonyms erroneous. *Papilio Hyale* is described with *yellow wings*; the colour of the wings in the supposed *Hyale* is not of that kind which Linnæus would have called yellow, (*flavis*,) but *fulvis*, being of a deep orange colour, much inclining to red. Either of these expressions will certainly admit of great latitude, but we must not therefore confound one with the other. The two silver spots are not constant, though it forms a part of the specific character; we have seen in both the clouded yellow and clouded orange butterflies, sometimes only one spot, though in general it has two. On the whole, the Linnæan descrip-

descrip-

description of *Papilio Hyale* seems to agree with the fictitious *P. Palæno* of our collections, and the specimen in the Linnæan cabinet places it beyond conjecture.

Fabricius has not attended to the errors of former authors on this subject; even in his last work, *Syst. Ent.* he adds to the specific description of his *P. Hyale*, *Mas margine alarum nigro immaculato, fœmina maculato\**, by this it is evident he alludes to the clouded orange, for it is not so in the Linnæan insect; the broad bar of black being constantly spotted in both sexes. We have also observed that the rare variety with white wings is only the female; that which is yellow is the male: the same is observed also of *Papilio Rhamni*, or Brimstone Butterfly; and as the males of all insects are more abundant than the females, and the males of *P. Hyale* are rare, the variety, or sex with white wings must be extremely so. These have been taken in a clover field in the month of August, in company with the clouded orange.

It may be proper to close this description with a few observations on the true *Papilio Palæno*, as the subject before us has hitherto passed under that name. Linnæus says, *alis integerrimis flavis apice nigris margineque fulvis: posticis subtus puncto argenteo*; this does not agree with, or at least expresses the Insect generally called *Palæno*, and the specimen in the Linnæan cabinet proves it to be a different species; the *P. Palæno* has no yellow spots on the black margins of the wings, and the spot in the center of the anterior pair is small and shaped like a shuttle; its native place is unknown. A variety of the pale clouded yellow is found in America, and by mistake is sometimes placed in cabinets as a British species.

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\* The wings in the males have a broad black bar on the exterior margin; in the female the bars are spotted.

## F I G. II.

## PAPILIO EDUSA.

## CLOUDED ORANGE BUTTERFLY.

## LEPIDOPTERA.

## PAPILIO.

## SPECIFIC CHARACTER

## AND

## SYNONYMS.

Wings entire, fulvous, or orange, with a black spot and margin of the same colour. On the under side greenish; a black spot on the anterior wings; silver on the posterior wings.

PAPILIO EDUSA: alis integerrimis fulvis: puncto margineque nigris, subtus virescentibus: anticis puncto nigro, posticis argenteo. *Fab. Ent. Syst.* 3. p. 2. 206. 643.

If our observations on the preceding species are satisfactory and conclusive, the Insect before us must be a distinct species, and not the true *P. Hyale*, for which it has ever been received. This involves another interesting consideration, for Linnæus must have been acquainted with this species, as he refers to figures of it in several Authors. It is probable he considered it as a variety, for it does not appear under another name in any part of his Writings.

Fabricus has described a new species of butterfly, under the name *Edufa*, in his last work *Ent. Syst.* which seems to agree with our insect, and we are confirmed in our opinion by Mr. Jones of Chelsea, who assisted Fabricius with considerable information, and assures us it is certainly the *P. Edufa* of that author.

In a former part of this work we have given the male of this insect as *P. Hyale*: the annexed figure represents the female, having large yellow spots in the black border of the wings. Both this and the preceding species are figured by Esper, in the *Papiliones de l'Europe*; and by Schæffer, in the *Icones Rarissimæ, &c.*



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## P L A T E CCXXXIX.

## F I G. I.

## P H A L Æ N A T R E P I D A ?

## S W A L L O W P R O M I N E N T M O T H .

## L E P I D O P T E R A .

## G E N E R I C C H A R A C T E R .

Antennæ taper from the base. Wings in general deflexed, when at rest. Fly by night.

## S P E C I F I C C H A R A C T E R

## A N D

## S Y N O N Y M S .

Wings deflexed; a prominence on the back. Anterior wings pale in the middle; brown next the margin; streaked. A spot in the center of the wing.

BOMBYX TREPIDA: alis deflexis dorso unidentatis: puncto medio ocellari strigaque postica maculari fuscis. *Fab. Ent. Syst.* 3. p. 1. 449. 130.

Bombyx tremula. *Wien. Verz.* 49. 4.

The Swallow Prominent Moth is scarce, the larva is supposed to live under the bark of willows, but it is more certain that the Moth is seldom found, except among those trees. In the day-time it has been seen against the trunk of trees, in the manner represented in the Plate.

We quote the authority of Fabricius with diffidence; his character is ambiguous; and can only be defined by the very general description he has added to it.

F I G.

## F I G. II.

## P H A L Æ N A C O M P R E S S A.

LEPIDOPTERA.

BOMBYX.

S P E C I F I C C H A R A C T E R

A N D

S Y N O N Y M S.

Wings compressed; white, with a large brown mark continued across the anterior Wings; grey in the middle, with several lunar white marks.

BOMBYX COMPRESSA: alis compresso adscendentibus niveis: macula communi fusca, centrali grisea: lunula alba.

*Fab. Ent. Syst.* 3. p. 2. 455. 149.

Phalæna spinula. *Wien. Verz.* 64. 6.

*Panz. Faun. Germ.* 1. tab. 6.

---

Not very uncommon in the month of June; it is called the Goose-egg Moth.

L.  
C.



## P L A T E CCXL.

## MELOE TECTA.

## COLEOPTERA.

## GENERIC CHARACTER.

Antennæ moniliform, extreme articulation oblong. Thorax roundish. Elytra soft and flexible. Head inflected and gibbous.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Black. Wing-cases nearly the length of the Abdomen. Antennæ thickest in the middle.

MELOE TECTA: atra, elytris abdomine haud brevioribus, antennis medio crassissimis. *Panz. Faun. Inf. Germ.*

Der Maywurmkäfer mit ungewöhlich langen Flügeldecken.—  
*Panz. Ibid.*

---

This is a rare Insect, and has not been described by Linnæus or Fabricius. It bears a distant resemblance to *Meloe Proscarabæus*; but the singular structure of the Antennæ will alone prove it a distinct species. The Antennæ in *Meloe Proscarabæus* are moniliform, or composed of several bead-like articulations, nearly of the same size: those of this new species are thickest in the middle; and in one point of view the fourth, fifth, and sixth articulations appear remarkably large and globular: in another, they seem writhed or distorted, and very concave; the other joints are as in the former species.—The whole Insect has a shining blue gloss: *Meloe Proscarabæus*

scarabæus is coal black. It is smaller, and the Wing-cases nearly cover the Abdomen. In *Meloe Proscarabæus* the wing-cases are only one-third the length of the Abdomen.

In some Cabinets, this Insect is arranged with a new specific name *autumnalis*; but as we find it is not a non-descript, we prefer that, under which it has been already described. In this we not only avoid the confusion arising from a change of names, but reject one merely local for another expressive of its specific character.

Our Specimens were found on Epping Forest, in July.

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## P L A T E    C C X L I .

## S P H I N X   P O P U L I .

## P O P L A R   H A W K   M O T H .

## L E P I D O P T E R A .

## G E N E R I C   C H A R A C T E R .

Antennæ thickest in the middle. Wings, when at rest deflexed.  
Fly slow, morning and evening only.

## S P E C I F I C   C H A R A C T E R

## A N D

## S Y N O N Y M S .

Wings reversed, dentated, grey: a white central spot on the anterior Wings. Posterior Wings red at the base.

S P H I N X   P O P U L I : Alis dentatis reversis griseis: anticis puncto albo, posticis basi ferrugineis. *Linn. Syst. Nat.* 2. 797. 2.—*Fn. Sv.* 1084.  
*Roef. Inf.* 3. tab. 30.  
*Schæff. Icon.* tab. 100.  
*Degeer. Inf.* 1. tab. 8. fig. 5.  
*Sepp. Inf.* 3. 3. tab. 1.  
*Albin. Inf.* tab. 38. fig. C.  
*Wilks pap.* 11. tab. B. C.

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This beautiful Insect is very common in this country, and not less so in every other part of Europe: it feeds on the poplar and willow

willow in the larva state, and frequents those trees in the winged state also. About the month of September, the Larva or Caterpillars are full grown, and change to the Pupa: the Sphinx appears in May.





## P L A T E C C X L I I .

## P A P I L I O C I N X I A .

P L A N T A I N F R I T I L L A R Y .

L E P I D O P T E R A .

## G E N E R I C C H A R A C T E R .

Antennæ clubbed at the end. Wings erect, when at rest. Fly by day.

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S .

Wings dentated, brown, with black marks: beneath fulvous, with three whitish bands across the lower Wings, marked with black spots.

PAPILIO CINXIA: Alis dentatis fulvis nigro maculatis: posticis subtus fasciis tribus albidis nigro maculatis. *Linn. Syst. 2. 784. 205.—Sw. 1063.*  
*Fab. Ent. Syst. 3. p. 2. 250. 779.*  
*Roes. Inf. 4. tab. 13. fig. 4. 5.*  
*Geoff. Inf. 2. 45. 12.*  
*Wilks' pap. 58. tab. 3. a 8.*  
*Esp. pap. 1. tab. 16. fig. 2.*  
*Schæff. Icon. tab. 204. fig. 1, 2.*

β. Papilio Delia, alis dentatis fulvo nigroque variis: posticis supra punctis quatuor ocellaribus, subtus albis: fasciis duabus fulvis; posteriore nigro punctata. *Linn. Fab.*

Papilio Delia. *Wien. Verz. 179. 6.*

The Larva are black, beset with spines and tufts of the same colour: the sides are marked with a double row of white spots, the feet red. It is found on the long plantain in April. The Flies appear in May. This is the rarest of the British Fritillary Butterflies, if we except *Papilio Lathonia*, the Queen of Spain Butterfly.

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## F I G. II.

## P A P I L I O L U C I N A.

## D U K E O F B U R G U N D Y F R I T I L L A R Y.

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S.

Wings indented, dark brown with bright yellowish-brown spots. Two rows of white spots on the underside of the posterior wings.

PAPILIO LUCINA: Alis dentatis fuscis testaceo maculatis: subtus fasciis duabus macularum albidarum. *Linn. Syst. Nat.* 2. 784. 203.—*Fn. Sv.* 1001.  
*Fab. Ent. Syst.* 3. p. 1. 250. 778.  
*Raj. Inf.* 122. 12.  
*Schæff. Icon. tab.* 172. fig. 1. 2.  
*Petiv. Gazoph. tab.* 16. fig. 10.

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This pretty Insect is found in the winged state in May; the Larva is unknown.—Taken in Hornsey wood.





2



3



1



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1



## P L A T E CCXLIII.

## F I G. I. I.

## COCCINELLA 14 GUTTATA.

## GENERIC CHARACTER.

Antennæ subclavated, truncated. Palpi club-formed, extreme articulation heart-shaped. Body hemispherical. Thorax and elytra margined.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Red, with fourteen white spots.

COCCINELLA 14 GUTTATA: coleoptris rubris, punctis albis quatuordecim. *Linn. Faun. Suec.* 492. *Syst. Nat.* p. 583. n. 34. *Fab. Ent. Syst.* I. p. 284. n. 85.

---

This species is rather of a brown than red colour, as described by Linnæus. It is probably an uncommon Insect. The smallest figure 1 is the natural size.

K

F I G.

## F I G . I I . I I .

## C O C C I N E L L A A N N U L A T A .

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S .

Red. An oblong black ring across the wing-cafes.

C O C C I N E L L A A N N U L A T A : coleoptris rubris, macula subannulari nigra. *Linn. Syst. Nat.* p. 579. n. 5. *Fab. Ent. Syst.* I. p. 268. n. 14.

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Not a very common species.

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## F I G . I I I . I I I .

## C O C C I N E L L A C A S S I D O I D E S .

## S P E C I F I C C H A R A C T E R .

Black with a red lunular mark, and a round spot of the same colour, on each of the wing-cafes. Margin prominent.

C O C C I N E L L A C A S S O I D E S : elytris nigris, lunulâ punctoque rubris, margine prominulo. *Marsham MS.*

---

This is a nondescript Insect. It was found in May.

HAR  
CAR



## P L A T E   C C X L I V .

## P A P I L I O   C A M I L L A .

W H I T E   A D M I R A B L E .

## G E N E R I C   C H A R A C T E R .

Antennæ clubbed at the end. Wings erect, when at rest. Fly by day.

## S P E C I F I C   C H A R A C T E R

A N D

## S Y N O N Y M S .

Wings dentated. Above, uniform dark brown, with a white band, and spots. Inner angle of the posterior wings red.

PAPILIO CAMILLA: alis dentatis fuscis subconcoloribus albo fasciatis maculatisque, angulo ani rubro. *Linn. Syst. Nat.* 2. 781. 187. *Roef.* 3. tab. 33. fig. 3. 4.

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The White Admirable Butterfly feeds upon the common honey suckle or woodbine, and is found in the winged state in the months of June and July, in the skirts of woods; its habit is much the same as that of *P. Atalanta*, Red Admirable, but it is by no means so common.

This species has hitherto been deemed the *Papilio Camilla* of Linnæus, though it differs in a slight degree from the descriptions and figures of authors who describe only German or Swedish specimens of it. In the late editions of the *Systema Naturæ*, *P. Camilla* is described with *P. Sibilla*, a *Papilio* nearly allied to it, but which Linnæus considered as a distinct species; his description of *Camilla* expressly saying “angulo ani rubro.”—The angulis ani, of *P. Sibilla*\*, not being of a red colour, removes it from the English species.

Fabricius is of a different opinion, and in dissenting from his authority it is incumbent to state our objections. In the *Species Insectorum* of that author, the *P. Camilla* with the Linnæan specific character, is made a variety  $\beta$  of *Sibilla*. The synonyms of the two insects are ambiguous, and the references not more satisfactory. Among others he refers for *P. Sibilla*, to *Drury's Inf.* 2. tab. 16. fig. 1, 2,—to *Roefel Inf.* 3. tab. 70. fig. 1, 2, 3,—and to *Schæffer* 152 †. fig. 1, 2. The two last are perhaps the same species: the first is unquestionably different. For *P. Camilla* he refers to *Roefel* tab. 33. fig. 3, and this agrees with our specimen, except in the colours of the upper surface being somewhat paler; so that we may conclude our English Insect is not only the *P. Camilla* of Linnæus but also the  $\beta$  *Camilla* of Fabricius.

The ultimate opinion of Fabricius is however different, for in the *Entomologia Systematica* since published, *Camilla* and *Sibilla* stands a distinct species; and *Camilla* is thus described, “alis dentatis atris coeruleo micantibus: fascia utrinque maculari alba, posticis subtus basi argentea immaculata.” *Linn. Syst. Nat.* 2. 781. 187. *habitat in Austria*. Thus *P. Camilla* will no longer agree with our insect, nor with that figured by *Roefel*, plate 33. fig 3. But if we refer to the *Systema Naturæ* of Linnæus, we discover another error, for

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\* *Roefel's* figure, vol. 3. tab. 70. has an obscure red band entirely across the posterior wings.—*Schæffer's* figure has no trace of red on that part.

† Erratum.—Designed for 153—for 152 is the German variety of *Papilio Iris*, Purple Emperor Butterfly.

instead of the above quoted specific character, Linnæus only says, "Alis dentatis fuscis subconcoloribus albo fasciatis maculatisque, angulo ani rubro." p. 781. 187. and this is clearly our insect.— From this the whole of the Fabrician account is obviously a complicated error of description and synonyms, and without attempting to investigate it further, we shall speak of both species as they appear to us.

We consider the Common English Admirable, as the true *P. Camilla*; and that Sibilla, and not Camilla is the Austrian species, as we have received it from that country; it is *much darker* in the *upper surface*, and has a *row of shining blue spots* all round the wings: the *base of the posterior wings*, beneath *silvery* and *without spots*, as Fabricius describes his Camilla. Our insect on the contrary has *no row of blue spots* on the *upper surface*, but a *red spot* at the inner angle of the posterior wings; the *base of the lower wings* are also *silvery beneath*, but *has black spots* upon it. They differ in many other respects: these alone determine them to be two species, and ours to be the *Camilla* of Linnæus.

We have inspected the drawings of Mr. Jones, from which Fabricius describes most of his Papiliones, and are confirmed in our opinion.

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## P L A T E C C X L V .

## C I M E X F L A V O - M A R G I N A T U S .

*GENERIC CHARACTER.*

Rostrum inflected. Antennæ longer than the thorax, wings folded crosswise, thorax margined. Feet formed for running.

*SPECIFIC CHARACTER.*

Black, longitudinal line on the thorax. Scutellum, exterior margin of the elytra, and spot in the apex yellow.

**CIMEX FLAVO-MARGINATUS** niger, thoracis lateribus lineaque dorsali, scutello elytrorumque margine apiceque macula flavis.

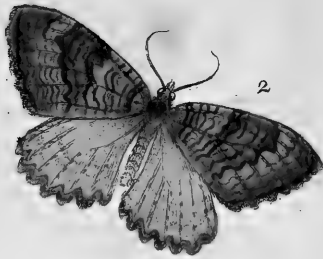
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A nondescript species: it was found on a thistle.

The line at fig. 1 denotes the natural size.







## P L A T E C C X L V I .

## F I G . I .

## P H A L Æ N A P A R T H E N I A S .

LEPIDOPTERA.

## G E N E R I C C H A R A C T E R .

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## S P E C I F I C C H A R A C T E R

AND

## S Y N O N Y M S .

Wings deflexed. First pair with greyish waved bars across. Second pair orange-red, having a large triangular black spot at the interior edge.

P H A L Æ N A P A R T H E N I A S : *Linn. Syst. Nat.* 2. 835.94. *Fn. Sv.* 1160.

B O M B Y X V I D U A , alis deflexis fuscis : anticis cinereo subfasciatis, posticis macula baseos fasciaque rufis. *Fab. Ent. Syst. T.* 3. p. 1. 468, 190.

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This species was described by Linnæus as *Phalæna Parthenias* ; Fabricius alters it to *Vidua*. It is not figured by any author unless the *Pb. Geom. Glauco fasciata* Gözii, figured in *Kleman. T.* 1. *tab.* 40. *fig.* 4, 5, be the same insect.

Found

Found on the white Poplar. (Populi Alba). It is a rare Insect and has been taken in Hornsey Wood in May.

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## F I G. II.

## P H A L Æ N A D U B I T A T A .

T I S S U E M O T H .

## S P E C I F I C C H A R A C T E R .

Antennæ fetaceous, wings waved with brown grey and black. The nerves of the wings spotted with white.

P H A L Æ N A D U B I T A T A , feticornis alis obscuris fusco cinereoque undatis: nervis albo punctatis. *Fab. Ent. Syst. T.* 3. p. 2. 168. 141.

Phalæna dubitata. *Wien. Verz.* 109. 3.

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The Tissue Moth is rarely met with near London. Our specimen was taken near Bath.



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## P L A T E CCXLVII.

## PAPILIO PAPHIA.

SILVER STRIPE FRITILLARY BUTTERFLY.

LEPIDOPTERA.

## GENERIC CHARACTER.

Antennæ clubbed at the ends, Wings erect, when at rest. Fly by day.

## SPECIFIC CHARACTER

AND

SYNONYMS.

Wings dentated fulvous, spotted with black, under-side striped with silver.

PAPILIO PAPHIA: Alis dentatis fulvis nigro maculatis, subtus fasciis argenteis. *Linn. Syst. Nat.* 2. 786, 209.  
*Fn. Sv.* 1064.  
*Geoffr. Inf.* 2. 42. 8.  
*Roes. Inf.* 1 pap. 1 tab. 7.  
*Schæff. Icon. tab.* 27. fig. 3. 4.  
*Wilks pap.* 57. tab. 2, a. 7.

---

Papilio Paphia is an elegant species of the British Papiliones. In size, colour, and general appearance of the upper side it is very similar to Papilio Agala; in the underside, it is extremely different.

Both

Both of these Butterflies are remarkable for that peculiar shining appearance of polished silver with which a few other of the European Fritillary Butterflies are ornamented; but in *Papilio Agala*, this silver is disposed in distinct splashes or spots, while in *Papilio Paphia* it appears in transverse streaks. These streaks are finely softened into the red and olive green of the wings, and produce altogether a singular and charming effect. It is from the latter circumstance the early English collectors termed this the *silver-wash* Fritillary.

The Caterpillar of this butterfly is found on the grass in May. It is of a plain yellowish brown, with several longitudinal stripes of dark brown; it is also thickly beset with barbed spines, a quarter of an inch in length, and has in particular two of a remarkable form on the first annulation next the head. It remains in the chrysalis twenty or twenty one days; and appears in the winged state early in June.

UNITED STATES  
DEPARTMENT OF JUSTICE



## P L A T E CCXLVIII.

F I G. I. II.

P H A L Æ N A A T O M A R I A.

D A R K H E A T H M O T H.

## G E N E R I C C H A R A C T E R.

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S.

Antennæ feathered. Wings entirely yellowish; with bands of brown, and the whole thickly sprinkled with atoms of the same colour.

P H A L Æ N A A T O M A R I A : p e c t i n i c o r n i s ; a l i s o m n i b u s l u t e s c e n t i b u s f a s c i i s a t o m i s q u e f u s c i s . *Linn. Faun. Suec.* 1245.—  
*Syst. Nat.* p. 862. n. 214.

Phalæna isofelata. *Scop. carn.* 558. female.

Phalæna pennata. *Scop. carn.* 569. male.

---

The Dark Heath Moth is considered as the Phalæna Atomaria of Linnæus, in the *Faun. Suec.* and *Systema Naturæ*. Fabricius adopts the Linnæan character, though in the Synonyms it is confounded with another *Geometræ*, the *Hirtaria* of some entomologists. He refers to the *Phalæna isofelata* and *Phalæna pennata* of Scopoli, which are evidently the two sexes of the Dark Heath Moth; but the Insect figured in Plate XXXIV. *Kleman's Inf.* is very distinct, and is the *P. Hirtaria* before alluded to. We cannot but observe how closely

the Linnæan description will apply in this instance, to two Insects which at first sight appear so extremely different.

This species is very common on heaths in May. The male is much darker in colour than the female, and has curious pectinated and ciliated antennæ, as Scopoli observes. The female has been mistaken for a distinct species.

### F I G. III.

#### PHALÆNA CLATHRATA.

PALE HEATH MOTH.

#### SPECIFIC CHARACTER

AND

#### SYNONYMS.

Antennæ fetaceous. Wings entirely yellowish, with transverse and longitudinal dark lines intersecting each other.

PHALÆNA CLATHRATA: feticornis alis omnibus flavescens: lineis nigris decussatis. *Lyn. Syst. Nat.* 2. 867. 238.  
 —*Fn. Sv.* 1275.—*Fab. Ent. Syst.* 3. p. 2. p. 183.  
 194.  
*Schæff. Icon. tab.* 216. fig. 2. 3.  
*Scop. Carn.* 536.  
*Sulz. Hist. Inf. tab.* 23. fig. 2.

This is a rare insect, except in Kent, where Dr. Latham informs us it is more common than the preceding species. Both sexes are very similar to the female Dark Heath Moth. The larva is unknown, but is supposed to feed on the *Erica*, being always found on these plants in the winged state. These insects have been called Heath Moths because they live in heaths, chalk-pits, and other barren places.—The Moths appear in June.



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## P L A T E C C X L I X .

## F I G . I . I .

## C U R C U L I O R U F U S .

## G E N E R I C C H A R A C T E R .

Antennæ subclavated, seated in the snout or proboscis, which is prominent.

## S P E C I F I C C H A R A C T E R .

Snout long. Feet formed for leaping, entirely red, except the eyes, which are black.

CURCULIO RUFUS: longirostris pedibus saltatoriis, totus rufis, oculis nigris folis exceptis. *Marsh. MS.*

*Geoff. Inf. I. 286. 19. 2.*

Probably a new species; it differs from the *Curculio Quercus* of the *Faun Suec*, and *Curculio viminalis* of *Ent. Syst.* in having the abdomen red, and being rather larger.

## F I G . I I . I I .

## C U R C U L I O A L N I .

## C O L E O P T E R A .

## S P E C I F I C C H A R A C T E R .

Snout long. Feet formed for leaping. Elytra livid red, with two obscure spots.

CURCULIO

CURCULIO ALNI: longirostris, pedibus faltatoriis elytris lividis, maculis duabus obscuris. *Faun. Suec* 608.—*Fab. Ent. Syst. I.* 445. 216.

---

Feeds on the leaves of the Alder.

The smallest insect at Fig. 2. represents the natural size.

---

### F I G. III.

#### CURCULIO TENUIROSTRIS.

##### *SPECIFIC CHARACTER.*

Snout long, thighs dentated, black, a short transverse white stripe on the elytra. Antennæ red.

Curculio tenuirostris: longirostris, femoribus dentatis niger, elytris albo subfasciatis, antennis rufis. *Fab. Ent. Syst. I.* p. 2. 443. 204.

---

Described by Fabricius from the cabinet of Sir Joseph Banks, Bart. without a reference to any figure. His general description is, Minor. C. Ceraforum. Caput nigrum rostro tenui, atro, glabro. Antennæ rufæ clava cinerea. Thorax niger pilis brevissimis cinereis. Scutellum cinereum. Elytra nigra fasciis plurimis, undatis pallidioribus.

NY  
LA



## P L A T E C C L.

## PAPILIO. BETULÆ.

BROWN HAIR STREAK BUTTERFLY.

LEPIDOPTERA.

## GENERIC CHARACTER.

Antennæ clubbed. Wings erect when at rest. Fly by day.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Wings furnished with small tails. Above, brown: beneath yellowish, with two white stripes on the posterior wings.

*Papilio Betulæ*: alis subcaudatis fuscis subtus luteis: posticis strigis duabus albis. *Lyn. Syst. Nat.* 2. 220.—*Fn. Sv.* 1070.

*Hesperia Betulæ*. *Fab. Ent. Syst.*

*Geoff. Inf.* 2. 58. 27.

*Albin. Inf. tab.* 5. fig. 7.

*Ernst, Pap. Europ.* 1. tab. 35. fig. 7.

*Hufnag. Inf. tab.* 12. fig. 1.

*Petiv. Gazoph. tab.* 11. fig. 11.

The male of this species is distinguished by a large fulvous mark or spot on the anterior wings. The larva is very remarkable, being broad and flat. It is found in the months of May and June on the Alder and Sloe. Changes to Chrysalis the first week in July. The Flies appear in August.

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P L A T E

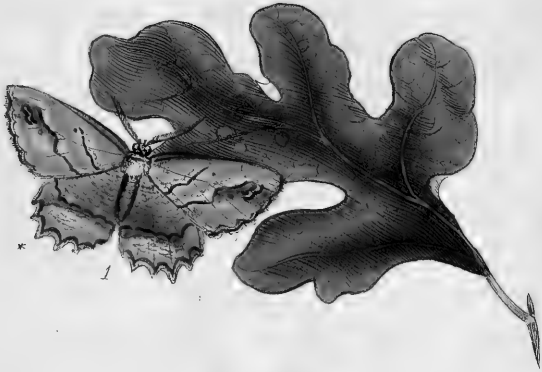
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P L A T E C C L I .

F I G . I .

P H A L Æ N A S U B E R A R I A .

W A V E D U M B E R M O T H .

L E P I D O P T E R A .

G E N E R I C C H A R A C T E R .

Antennæ taper from the base. Wings in general deflexed when at rest. Fly by night.

S P E C I F I C C H A R A C T E R .

Antennæ pectinated, yellowish. A dark ferruginous dash across the superior wings, and a band of the same on the inferior pair. The whole of the upper surface streaked with numerous irregular transverse lines.

P H A L Æ N A S U B E R A R I A : p e c t i n i c o r n i s l u t e s c e n s , a l i s s u p e r i o r i b u s l i t u r a , i n f e r i o r i b u s f a s c i a f u s c o f e r r u g i n e i s , o m n i b u s s t r i g o s i s . *Marsham MS.*

---

The Waved Umber Moth is found on the Oak in May. It is described only in the MS. of T. Marsham, Esq.

## F I G . II.

## P H A L Æ N A L A C E R T I N A R I A .

## S P E C I F I C C H A R A C T E R

A N D

## S Y N O N Y M S .

Antennæ feathered. Wings much indentated, yellowish brown. Two dark lines across the anterior wings, and a light spot in the middle. Posterior wings without any marks.

P H A L Æ N A L A C E R T I N A R I A , p e c t i n i c o r n i s a l i s e r o s i s l u t e s c e n t i b u s :  
 strigis duabus punctoque medio fuscis, posticis immaculatis. *Lin. Syst. Nat.* 2. 860. 204.  
*Fab. Ent. Syst. T.* 3. p. 2. 135.  
*Schæf. Icon. tab.* 66. fig. 2. 3.  
*Degeer. Inf.* 1. tab. 10. fig. 7. 8.  
*Reaum. Inf.* 2. tab. 22. fig. 4—6.

---

Found on the Oak in May and June.

F I G .

## F I G . I I I .

## P H A L Æ N A M A C U L A T A .

*S P E C I F I C C H A R A C T E R .*

Wings yellow spotted with black.

P H A L Æ N A M A C U L A T A : feticornis alis flavis nigro maculatis.

*Fab. Ent. Syst. T. 3. p. 2. 197. 244.*

Phalæna Macularia. *Lynn. Syst. Nat. 2. 862. 213.*

---

Extremely common about the hedges in the vicinity of London during the months of June and July.



2



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## P L A T E CCLII.

## F I G. I. I.

## CIMEX VITTATUS.

## GENERIC CHARACTER.

Rostrum inflected. Antennæ longer than the thorax. Wings folded crosswise. Back flat. Thorax margined. Feet formed for running.

## SPECIFIC CHARACTER.

Black. Anterior and posterior part of the thorax yellow: scutellum yellow. Base of the antennæ, and elytra red; the latter with a longitudinal whitish stripe: and bent in at the apex.

CIMEX VITTATUS: thorace anteriorius posteriorisque scutelloque flavis, antennarum basi elytrisque rufis: vitta apiceque inflexo albis. *Gmel. Syst. Nat. p. 2166. n. 631?*

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Taken on the Rose. Fig. I. I. natural size, and magnified.

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## F I G. II. II.

## CIMEX POPULI.

## SPECIFIC CHARACTER.

Oblong. Whitish, clouded and sprinkled with brown. Antennæ fetaceous.

CIMEX POPULI: oblongus albo fuscoque nebulosus antennis fetaceis.  
*Linn. Faun. Suec. 963.*

---

Very common against the trunks of trees, the Poplar in particular.



# L I N N Æ A N I N D E X

T O

## V O L VII.

### COLEOPTERA.

	Plate	Fig.
Dermeftes Pellio - - - -	231.	3.
———— Scarabœides - - - -	ib.	4.
Coccinella Annulata - - - -	243.	2. 2.
———— 14 guttata - - - -	ib.	1.
———— Caffidoides - - - -	ib.	3.
Curculio Rufus - - - -	249.	1.
———— Alni - - - -	ib.	2.
———— Tenuiroftris - - - -	ib.	3.
Attelabus Apiarius - - - -	231.	1.
———— Formicarius - - - -	ib.	2.
Carabus Violaceus - - - -	222.	1.
———— Gemmatus - - - -	ib.	2.
———— Granulatus - - - -	ib.	3.
Meloe Tecta - - - -	240.	

### HEMIPTERA.

Cimex Gonymelas - - - -	218.	1.
———— Hæmorrhoidalis - - - -	ib.	2.
———— Vittatus - - - -	252.	1.
———— Populi - - - -	ib.	2.
———— Flavomarginatus - - - -	245.	

NEUROP-

# I N D E X.

## LEPIDOPTERA.

	Plate	Fig.
Papilio Hyale - - - -	238.	1.
——— Eufua - - - -	ib.	2.
——— Camilla - - - -	244.	
——— Paphia - - - -	247.	
——— Cinxia - - - -	242.	1.
——— Lucina - - - -	ib.	2.
——— Betulæ - - - -	250.	
——— Hippothoe ? - - - -	217.	
——— Corydon - - - -	236.	1. 2.
Sphinx Convolvuli - - - -	228.	
——— Larva et Pupa - - - -	229.	
——— Populi - - - -	241.	
Phalæna Monacha - - - -	227.	
——— Vidua - - - -	246.	1.
——— Compressa - - - -	239.	2.
——— Trepida - - - -	ib.	1.
——— Nupta - - - -	224.	
——— Maura - - - -	230.	1.
——— Lucipara - - - -	ib.	2.
——— Derafa - - - -	223.	1.
——— Lichenes - - - -	ib.	3.
——— Tragopoginis - - - -	ib.	2.
——— Myrtilli - - - -	221.	
——— Prodomaria - - - -	219.	
——— Betularia - - - -	237.	
——— Prunaria - - - -	233.	1.
——— Duplicata - - - -	ib.	2.
——— Vespertaria - - - -	ib.	3.
——— Chærophyllata - - - -	ib.	4.
——— Dubitata - - - -	246.	2.
——— Atomaria - - - -	248.	1. 2.
——— Clathrata - - - -	ib.	3.
——— Suberaria - - - -	251.	1.
——— Lacertinaria - - - -	ib.	2.
——— Maculata - - - -	ib.	3.

## NEUROPTERA.

# I N D E X.

## NEUROPTERA.

	Plate	Fig.
Phryganea Rhombica	-	220.

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## HYMENOPTERA.

Tenthredo Lutea	-	-	-	234.
Sirex Spectrum	-	-	-	223.
Chrysis Cyanea	-	-	-	235.
Vespa Vulgaris	-	-	-	226.

ALPHABETICAL

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 230

LECTURE 10

STATISTICAL MECHANICS

ENTROPY

AND THE SECOND LAW

OF THERMODYNAMICS

AND THE ARROW OF TIME

AND THE BOLTZMANN CONSTANT

AND THE GIBBS PARADOX

AND THE MAXWELL DEMON

AND THE INFORMATION THEORY

AND THE ENTROPY OF A SPIN

AND THE ENTROPY OF A MIXTURE

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AND THE ENTROPY OF A GAS

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AND THE ENTROPY OF A SOLID

AND THE ENTROPY OF A CRYSTAL

AND THE ENTROPY OF A POLYMER

AND THE ENTROPY OF A NETWORK

AND THE ENTROPY OF A FLUID

AND THE ENTROPY OF A PLASMA

AND THE ENTROPY OF A QUANTUM SYSTEM

# ALPHABETICAL INDEX

TO

## V O L. VII.

	Plate	Fig.
Alni, Curculio - - - -	249	2.
Annulata, Coccinella - - - -	243	2. 2.
Apiarius, Attelabus - - - -	231	1.
Atomaria, Phalæna - - - -	248	1. 2.
Betularia, Phalæna - - - -	237	
Betulæ, Papilio - - - -	250	
Camilla, Papilio - - - -	244	
Cassidoides, Coccinella - - - -	243	3.
Chærophyllata, Phalæna - - - -	233	4.
Cinxia, Papilio - - - -	242	1.
Clathrata, Phalæna - - - -	248	3.
Compressa, Phalæna - - - -	239	2.
Convolvuli, Sphinx - - - -	228	
———— Pupa, ditto - - - -	229	
Corydon, Papilio - - - -	236	1. 2.
Cyanea, Chrysis - - - -	235	
Derafa, Phalæna - - - -	223	1.
Dubitata, Phalæna - - - -	246	2.
Duplicata, Phalæna - - - -	233	2.
Edufa, Papilio - - - -	238	2.

Flavo-

# I N D E X.

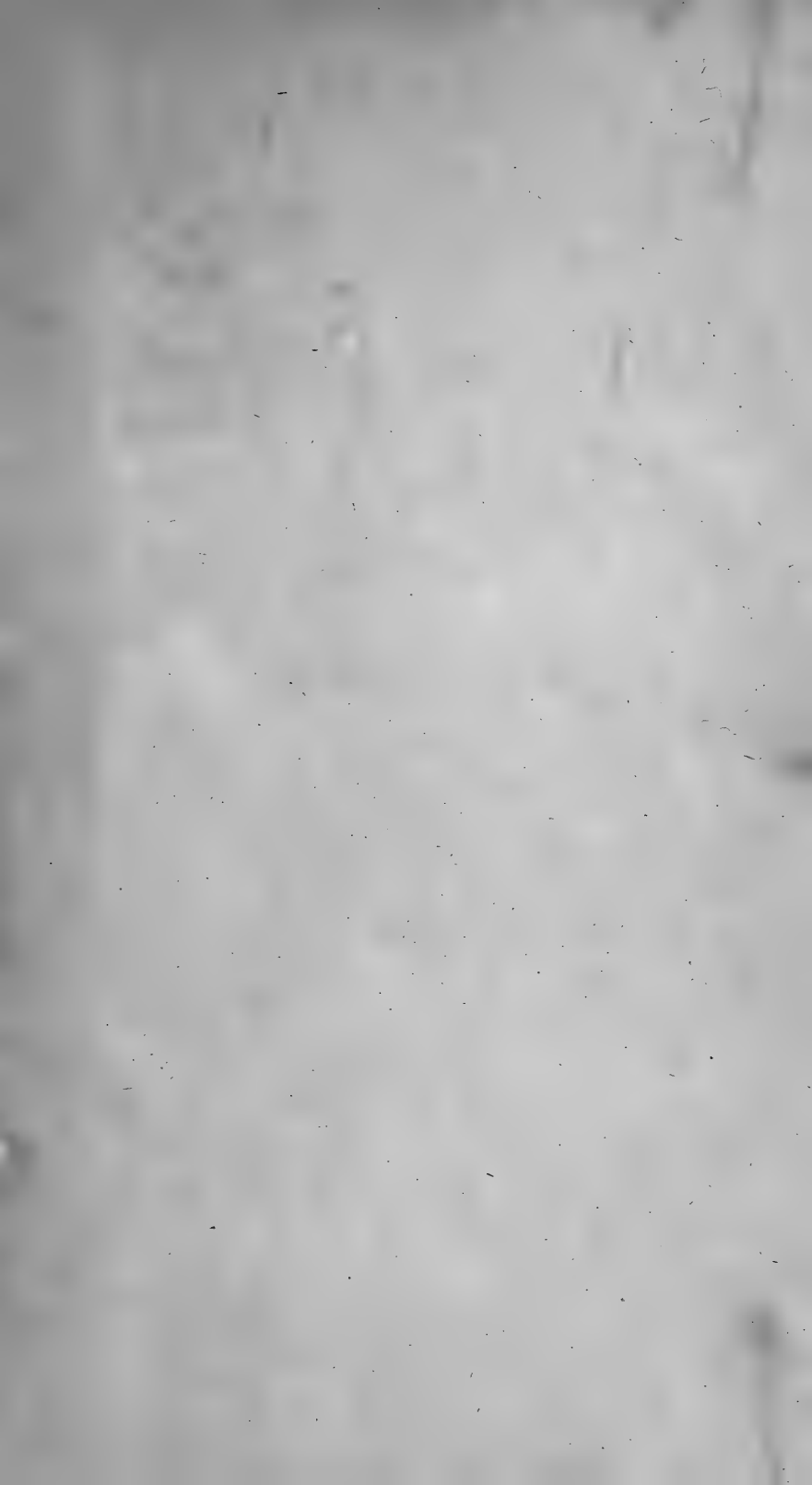
	-	-	-	Plate	Fig.
Flavo-marginatus, Cimex	-	-	-	245	
Formicarius, Attelabus	-	-	-	231	2.
Gemmatum, Carabus	-	-	-	222	2.
Gonymelas, Cimex	-	-	-	218	2.
Granulatus, Carabus]	-	-	-	222	3.
Hæmorrhoidalis, Cimex	-	-	-	218	2.
Hippothoe? Papilio	-	-	-	217	
Hyale, Papilio	-	-	-	238	1.
Lacertinaria, Phalæna	-	-	-	251	2.
Lichenes, Phalæna	-	-	-	223	3.
Lucina, Papilio	-	-	-	242	
Lucipara, Phalæna	-	-	-	230	2.
Lutea, Tenthredo	-	-	-	234	
Maculata, Phalæna	-	-	-	251	3.
Maura, Phalæna	-	-	-	230	1.
Myrtilla, Phalæna	-	-	-	221	
Nupta, Phalæna	-	-	-	224	
Paphia, Papilio	-	-	-	247	
Pellio, Dermestes	-	-	-	231	3.
Populi, Sphinx	-	-	-	241	
Populi, Cimex	-	-	-	252	2. 2.
Prodromaria, Phalæna	-	-	-	219	
Prunaria, Phalæna	-	-	-	233	1.
14-guttata, Coccinella	-	-	-	243	1. 1.
Rhombica, Phryganea	-	-	-	220	
Rufus, Curculio	-	-	-	249	1.
Scarabœides, Dermestes	-	-	-	231	4.
Spectrum, Sirex	-	-	-	223	
Suberaria, Phalæna	-	-	-	251	1.

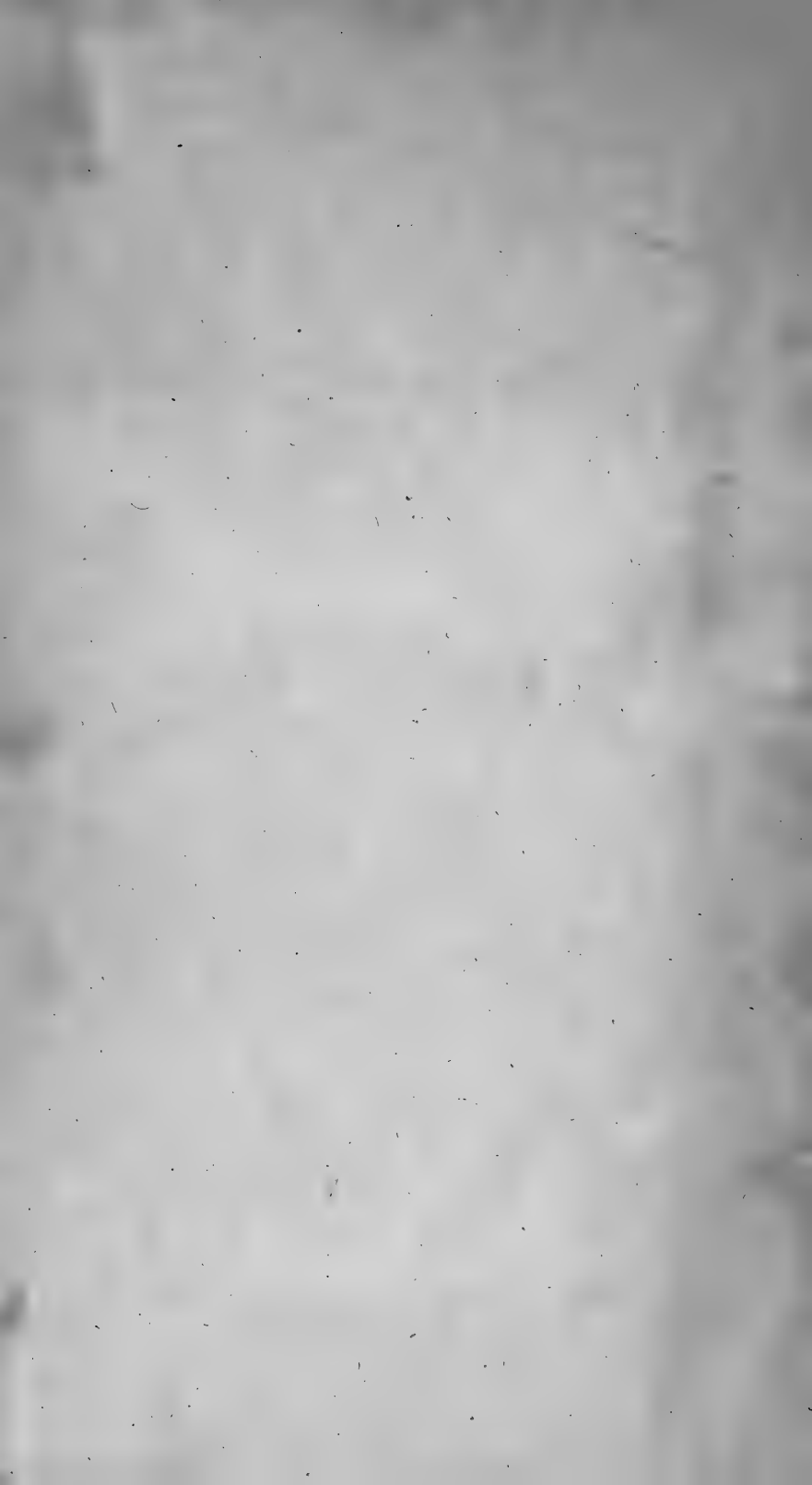
# I N D E X.

	Plate	Fig.
Tecta, Meloe - - - - -	240	
Tenuirostris, Curculio - - - - -	249	3.
Tragopoginis, Phalæna - - - - -	223	2.
Trepida, Phalæna - - - - -	239	I.
Vespertaria, Phalæna - - - - -	233	3.
Vidua, Phalæna - - - - -	246	I.
Violaceus, Carabus - - - - -	222	I.
Vittatus, Cimex - - - - -	252	I. I.
Vulgaris, Vespa - - - - -	226	













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