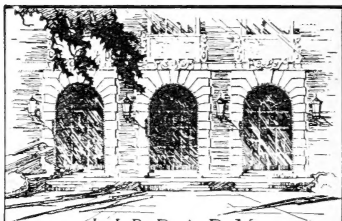


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THE
BUTTERFLY COLLECTOR'S
Vade Mecum:
OR A
SYNOPTICAL TABLE
OF
ENGLISH BUTTERFLIES.

PRICE FIVE SHILLINGS.

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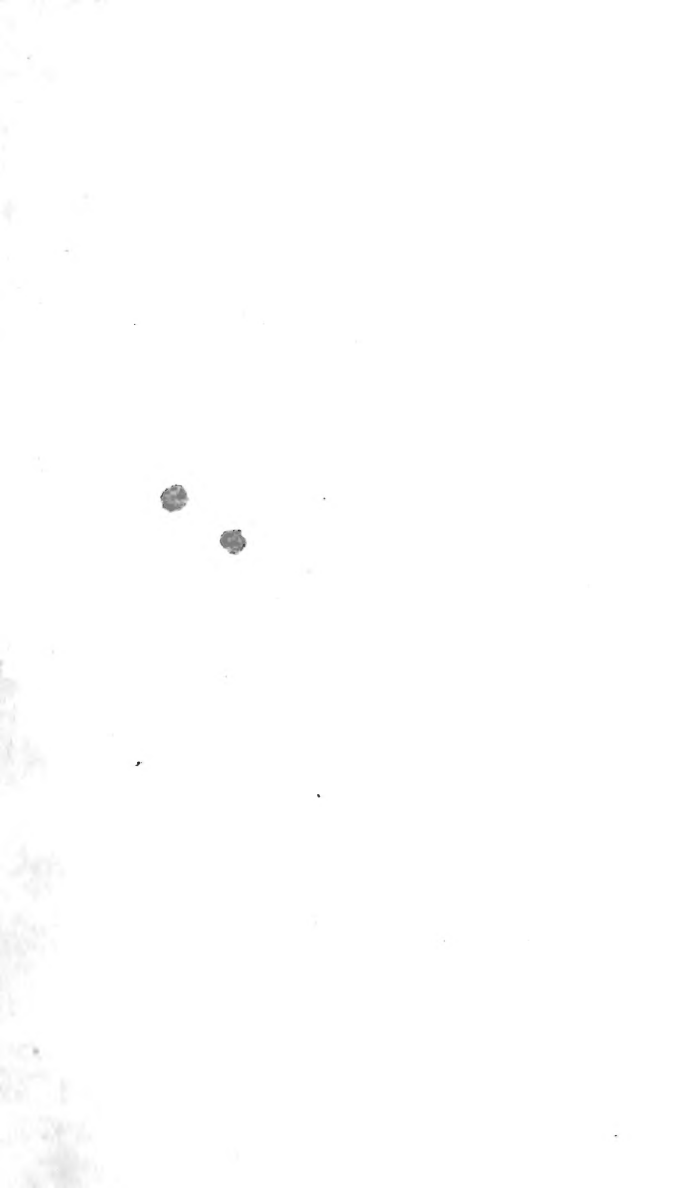
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NATURAL
HISTORY

W. L. Nichols.

1824.

Apr
1846





THE
BUTTERFLY COLLECTOR'S
Vade Mecum;
OR A
SYNOPTICAL TABLE
of
ENGLISH BUTTERFLIES.

"Nomina si nescis. perit et Cognitio Rerum."

I P S W I C H:
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J 486 Nat. Hist.

TO THE

REV. WILLIAM KIRBY, A. M.

F. R. S. & F. L. S.

RECTOR OF BARHAM, IN SUFFOLK,

WHOSE

ARDENT AND UNREMITTING ZEAL IN THE STUDY OF

THE WORKS OF NATURE,

AND WHOSE

VALUABLE AND SCIENTIFIC LABOURS,

DEMAND THE GRATEFUL ACKNOWLEDGEMENT OF

EVERY TRUE FRIEND AND ADMIRER OF

NATURAL HISTORY;

THE FOLLOWING

"SYNOPTICAL LIST OF ENGLISH BUTTERFLIES"

ENRICHED

BY HIS ACCURATE AND VALUABLE REMARKS,

IS RESPECTFULLY INSCRIBED.

Entomology 143 or 55 Wheldon
2/28/55

P R E F A C E.

From the many additions, which have been made by scientific Entomologists to the List of *English Butterflies*, since the Publication of the Aurelian's Pocket Companion by Harris, in 1775; as well as from the circumstance of that Work having long been out of print, and therefore difficult to be procured; it is presumed that the admirers of this pleasing branch of Natural History will be interested in the appearance of a "*Vade Mecum*," which is partly extracted from "*Hawarth's Lepidoptera*," a work of great merit, but which is now not easily obtained.

The Editor of the present little Work cannot but admit that it might have been more complete; but it is not the province of Authors to point out their own defects: it is submitted therefore, such as it is, to the kind indulgence of the British *Aurelianist*, with requesting his attention to the three following remarks:—

1. In this Synoptical Table, are inserted the names of those Butterflies *only*, which are recorded as *purely English* on unquestionable

authority ; except in a few instances where they are marked as doubtful.

2. To the List of that able Naturalist *Hawarth*, one species, *P. Labienus*, has been added.*
3. That the respective *Families* have been simplified ; and *Twelve only* (the Sub-divisions being incorporated) retained.

The Natural History of Animals is the most interesting to man as an animated being, and the most striking and prominent in the phenomena which it displays. And although the study of every class is most indisputably attended with peculiar advantages, yet it may safely be affirmed, that it is from the knowledge of the characters, metamorphoses, and various modes of life which Insects are destined to pursue, that a more intimate acquaintance may be obtained with the laws of Nature, and veneration for the great Creator of all, than can be derived from the contemplation of any other class in the animated world. Entomology or the science of insects, therefore, has become a favorite pursuit ; and the talent and research, displayed in the elucidation of it by a *Kirby* and a *Spence*, com-

* A species which was lately discovered by the Rev. Revett Sheppard, M. A. of Wrabness, in Essex, a most intelligent and scientific Naturalist, to whom the Editor is indebted for the "Synoptical Table," and for the idea of this little Work.

bined with the moral and religious instruction which their writings universally convey, cannot fail of increasing the number of votaries, and thereby opening “*a mine of pleasure new, boundless and inexhaustible.*”

But the most fascinating branch of this study is perhaps the *Genus PAPILIO*—and however the Hunters of Butterflies may be laughed at by the vulgar, and whatever ridicule may be thrown upon this their favorite pursuit, still the great number and variety of these Insects, as well as the extreme beauty of some of them, cannot fail of attracting the notice and exciting the admiration of those, who are fond of contemplating the beauties and wonders of creation, and thereby rendering the study of them a source of pleasure and instruction.

“See, exclaims the illustrious *Linnaeus*—the large elegant painted wings of the Butterfly and four in number, covered with small imbricated scales; with these it sustains itself in the air the whole day, rivalling the flight of birds and the brilliancy of the Peacock. Consider this insect through the wonderful progress of its life, how different is the first period of its being from the second, and both from the parent insect: its changes are an inexplicable enigma to us: we see a green Caterpillar furnished with sixteen feet, creeping, hairy, and

feeding upon the leaves of a plant ; this is changed into a Chrysalis, smooth, of a golden lustre, hanging suspended to a fixed point, without feet, and subsisting without food: this insect again undergoes another transformation, acquires wings and six feet, and becomes a variegated white Butterfly, living by suction upon the honey of plants. What has Nature produced more worthy of our admiration? Such an animal coming upon the stage of the world, and playing its part there under so many different masks! In the egg of the *Papilio*, the epidermis or external integument falling off, a Caterpillar is disclosed; the second epidermis drying and being detached, it is a Chrysalis; and the third, a Butterfly.”*

The alteration of form, which the whole of the papilionaceous tribe undergo, affords a subject of the most pleasing contemplation to the mind of the naturalist; and though a deeply philosophical survey demonstrates that there is no real or absolute change produced in the identity of the creature itself, or that it is in reality any other than the gradual and progressive evolution of parts before concealed, and which lay masqued under the form of an insect of a widely different appearance, yet it is justly viewed with the highest admiration, and even generally acknowledged as, in the most lively manner, typical of the last eventful change.

* Linnæus Orat. on Insects—Am. Acad. v. 2. p. 356.

If any regard be paid to a similarity of names, it should seem that the ancients were so struck with the transformations of the Butterfly, and its revival from a seeming temporary death, as to have considered it as an emblem of the soul; the Greek word $\Psiυχ\eta$ signifying both the soul and a butterfly. This is also confirmed by their allegorical sculptures, in which the butterfly occurs as an emblem of immortality.

Swammerdam, speaking of the metamorphosis of insects, uses these strong words "This process is formed in so remarkable a manner in butterflies, that we see therein the resurrection painted before our eyes, and exemplified so as to be examined by our hands."

Modern naturalists, impressed with the same notion, and laudably solicitous to apply it as an illustration of the awful mystery revealed in the sacred writings, have drawn their allusions to it from the dormant condition of the papilionaceous insects during their state of chrysalis, and their resuscitation from it. This idea is also beautifully expressed by the elegant Author of "the Pleasures of Memory," in the following very appropriate stanzas:—

Child of the sun! pursue thy rapturous flight,
Mingling with her thou lov'st in fields of light;
And where the flowers of paradise unfold,
Quaff fragrant nectar from their cups of gold.

There shall thy wings, rich as an evening sky,
 Expand and shut with silent extasy.
 —Yet wert thou once a worm, a thing that crept
 On the bare earth, then wrought a tomb and slept!
 And such is man; soon from his cell of clay
 To burst a seraph in the blaze of day!

ROGERS.

Even the animated illustration taken from the vegetable world, so justly admired, as best calculated for general apprehension, must yield in the force of its similitude to that drawn from the insect's life, since nature exhibits few phenomena that can equal so wonderful a transformation.

It would, however, be a waste of time to prove how delightful and instructive it is to

“ Look through Nature up to Nature's God ;”

as well as an useless labor to demonstrate, that “ if any judicious or improved use is to be made of the natural bodies around us it must be expected from those, who discriminate their kinds, and study their properties.”

“ To see all things in God,” say the Authors of the Introduction to Entomology, “ has been accounted one of the peculiar privileges of a future state; and in this present life “ to see God in all things,” in the mirror of the creation to behold and adore

the reflected glory of the Creator is no mean attainment ; and it possesses this advantage, that thus we sanctify our pursuits, and instead of loving the créatures for themselves, are led, by the survey of them and their Instincts, to the love of HIM who made and endowed them." The more then we study the works of Creation, the more will the wisdom and the goodness of the Creator be manifested ; and while we admire the order and harmony of the whole, or the beauty and variety of its parts, it will be impossible not to adore " HIM who is wise in heart, and wonderful in working," and at the same time confess with humility of soul, that

" The Hand that made them is divine."

IPSWICH, MAY, 1824.

L. J.

INTRODUCTORY REMARKS.

PAPILIO, the BUTTERFLY, is in Entomology a genus of Insects of the Order Lepidoptera (from λειπίς, a scale, and πτερόν, a wing). Their generic character is, *Antennæ*, thickening towards the extremity, and commonly terminating in a knob or clavated tip; and four wings covered with fine scales in the form of powder or meal, which, when sitting, are erect, and meet upwards. They fly in the day time. "The great number," says Dr. Shaw, "of species in this genus, makes it absolutely necessary to divide them into sections or sets, instituted from the habit or general appearance, and in some degree, from the distribution of the colours on the wings. This division of the genus is conducted by Linnæus in a peculiarly elegant and instructive manner, being an attempt to combine natural and civil history, by attaching some illustrious ancient name to an insect of such or such particular cast." The names of Butterflies are, however, sometimes taken from the plants on which they feed.

The Butterfly feeds on the nectareous juice of flowers, or on the saccharine substance which exudes from the leaves of vegetables, and will some-

times alight, and suck the sweets of ripe fruit that has been broken by its fall.

The greater part of those Lepidopterous insects, which come forth in the spring or summer, perish or disappear at the approach of winter. There are few, the period of whose life exceeds that of a year. Some outlive the rigors of winter from being concealed under ground, and others remain hid in the bark of trees, or in chinks of old walls, but the proportion of those which survive is very inconsiderable, unless it be those in the egg state. Those which are hatched in the autumn and live under ground, or in other places of security during winter, usually come forth in the spring, take proper nourishment and undergo their several changes to the perfect state.

The papilionaceous insects in general, soon after their enlargement from the chrysalis, and commonly during their first flight, discharge some drops of red-colored fluid, more or less intense in different species. "This circumstance," observes Dr. Shaw, "is peculiarly worthy of attention from the explanation which it affords of a phenomenon sometimes considered, both in ancient and modern times, in the light of a prodigy; viz. the descent of red drops from the air; which has been called a shower of blood: an event recorded by several writers, and particularly by Ovid, among the prodigies which took place after the death of the great dictator.

“ Sæpe faces visæ mediis ardere sub astris,
Sæpe inter nimbos guttæ cecidere cruentæ.”

“ With threatening signs the lowering skies were fill'd,
And sanguine drops from murky clouds distill'd.”

This highly rational elucidation of a phenomenon, at first view so inexplicable, seems to have been discovered by the celebrated Pierescius, at Aix, in Provence, where a shower of this kind fell in 1608—the common people were terrified with the apprehension of some great general calamity—but that intelligent Naturalist, enquiring into the affair with minute attention, was fully convinced that these drops were scattered by an innumerable swarm of the *Papilio C. Album*, hovering in the air: he preserved several of the Caterpillars of this insect in a glass, which after their transformation discharged these drops of blood—This discovery ruined two hypotheses, which had been supported with equal ability, one, that it was the work of evil spirits, the other, that these drops were formed from red exhalations precipitated again in rain. *

The same notion was also entertained by Swammerdam, though he does not appear to have verified it from his own observation.

The *Larvæ* of Butterflies are universally and emphatically known by the name of *Caterpillars*, and are extremely various in their forms and colours; some being smooth, and some beset with either simple or ramified spines; while others are seen to

* Avelin *Miracula Insectorum*, Am. Acad. v. 3. p. 313.

protrude from their neck, when disturbed, a forked scent-organ, which probably is intended to drive away the Ichneumons that attack them. They are also furnished with palpi, jaws, several eyes, and sixteen feet, and are in their motions very active and alert.

That accurate observer of Nature, accomplished scholar, and highly pleasing Poet, the late Rev. Dr. Hurdis, has thus minutely described the birth and habits of the Caterpillar.

“Hatch’d by the sunbeam from contiguous cells,
 Around the slender apple-twig combin’d
 In circuit orderly, egg glued to egg,
 Issue the caterpillar swarm minute.
 There left, oviparous, her half-born brood,
 Ere summer clos’d, the parent left and died.
 There have they still endur’d, and still surviv’d
 Sharp winter’s tyranny; the bitter frost,
 That slew the myrtle, and the lasting leaf
 Of the screen’d laurel chang’d, no death to them.

Now busily conven’d, upon the bud
 That crowns their genial branch they feast sublime,
 And spread their muslin canopy around,
 Pavilion’d richer than the proudest king.
 The spinster *Caterpillar* ties aloft,
 Fine as the gossamer, his slender cord
 To his lov’d cradle, the recov’ring elm,
 And playfully suspended, rocks and whirls,
 And, ere his wings are granted, lives in air.”

Favorite Village, b.4. p. 175, 6.

The Caterpillar, whose life is one continued succession of changes, often moults its skin before it attains its full growth—and it is not simply the skin that is changed, for when it moults, in the exuviæ are found the skull, jaws, and all the exterior parts both scaly and membranaceous, which compose its upper and under lip; its antennæ, palpi, even those crustaceous pieces within the head which serve as a fixed basis to a number of muscles, with the spiracles, the claws and sheaths of the anterior legs, and in general the traces of all that is visible in the external figure of the Caterpillar. This change is effected by the insect withdrawing itself from the outer skin, when it finds itself incommoded from being confined within too narrow a compass; but to accomplish this change is the work of some labor and time—the Caterpillar generally fasts a whole day after moulting. The Caterpillars of Lepidopterous insects, with a few exceptions, are destitute of all means of defence, and are the prey of birds, and other voracious creatures. Many of them feed close to the ground or under the surface, subsisting on the lower parts or roots of plants; and for this reason many kinds are seldom seen, and others remain unknown. Some of the Lepidopterous Caterpillars are solitary, others live in society. **“* A Caterpillar, when grown

* Shaw, vol. 6. p. 206.

to its full size, retires to some convenient spot, and securing itself properly by a small quantity of silken filaments, either suspends itself by the tail, hanging with its head downwards, or else in an upright position, with the body fastened round the middle by a proper number of filaments. It then casts off the Caterpillar skin and commences Chrysalis, in which state it continues till the enclosed Butterfly is ready for birth, which, liberating itself from the skin of the Chrysalis, remains till its wings, which are at first very short, weak, and covered with moisture, are fully extended: this happens in the space of a quarter of an hour, when the animal suddenly quits the state of inactivity to which it had been so long confined and becomes at pleasure an inhabitant of the air."

This wonderful resuscitation has been so spiritedly described by the French Poet of Nature, that no apology will, I trust, be required for the insertion of the following extract from his "Jardins."

"Voyez ce Papillon échappé du tombeau,
 Sa mort fut un sommeil, et sa tombe un berceau;
 Il brise le fourreau qui l'échainait dans l'ombre;
 Deux yeux paraient son front, et ses yeux sont sans nombre;
 Il se trainait à peine, il part comme l'éclair;
 Il rampait sur la terre, il voltige dans l'air."

DE LILLE.

Nor can I resist offering another equally applicable quotation from the amiable Hurdis ;

“ Behold again with saffron wing superb
The giddy Butterfly. Releas'd at length
From his warm winter cell, he mounts on high,
No longer reptile, but endued with plumes,
And through the blue air wanders ; pert alights,
And seems to sleep, but from the treacherous hand
Snatches his beauties suddenly away
And zig-zag dances o'er the flowery dell.”

Favorite Village, b. 4. p. 172, 3.

The *Pupa*, or *Chrysalis* is naked, and remains torpid for a longer or shorter period; frequently, hanging to different substances by means of threads attached to its middle or tail—The eggs or Chrysalises of some of the species, will lie dormant for several years, it being an undoubted fact, that a species of Butterfly shall be plentiful one year, and not be seen again till many years after.

DIRECTIONS FOR COLLECTING AND PRESERVING BUTTERFLIES.

1. It is useless to go out to collect Butterflies if the weather be cool, or much wind stirring, as at such times almost all kinds of insects conceal themselves—A warm damp air, such as generally comes after rain, is what they prefer, when they fly near the earth to enjoy the humidity which arises in steams from the ground.—In hot and dry days it is common to see the Butterflies settle in numbers on the mud in ditches; from this it may be inferred that heat, with moisture, best agrees with their nature. *P. Brassicæ* is a good token for fine weather; when any number of this species are out in a morning, it rarely happens but a fine day ensues.

2. Boxes which are taken in the pocket for Caterpillars, and cages for breeding insects, should not be made of deal or fir, except they be well lined with paper, with holes in the sides and tops covered with crape or canvas; for the effluvia of the turpentine, raised by the heat of the pocket, or of the sun, is extremely prejudicial to them, and seldom fails to destroy the greater part of the Caterpillars

contained therein for any length of time—The cause of the deaths of the Caterpillars, found at the bottoms of cages or pocket-boxes, is generally attributed to bruises got in beating the trees, when collecting them; but this is a great mistake, as those which happen to be injured in beating, seldom die till the time of changing their skin, or of their transformation.

3. In the preservation of the Chrysalides during the winter, it will be necessary to keep them in cold and moist places, as in a cellar or out-house, or the greater part of them will be killed, especially those whose nature it is to change in the earth; for dry warmth is apt to exhale the nutritive moisture from them, harden the shell and weaken the insects so much, that at the time when they should appear in their winged state, they have not strength left sufficient to burst open the Chrysalis and come forth from their confinement.

4. When any of the Butterflies are extended on the setting board beneath the card braces, let them remain in that situation, till not only the aqueous moisture, but the oily and saline particles also, be evaporated; otherwise the wings will not only start from their natural position, but the bodies, with the *antennæ*, will grow mouldy when in the cabinet; and what is of worse consequence, breed millions

of *animalcules*, which, except some remedy is applied, will infallibly destroy them.—They should therefore be kept in some dry place, open to the air, but free from dust, for a considerable time before they are placed in the cabinet.

5. If at any time the preserved insects should appear as if growing mouldy, or be infested with small *animalcules*, which may be known by a kind of dust seen beneath the abdomen—the only effectual remedy is the smoke of tobacco, which must be blown through the small end of a pipe—through a hole made for that purpose, at the back of the drawer or box which contains them.—This not only corrects the putrid and stagnant air, but kills those formidable enemies which often destroy whole cabinets of insects—this process will preserve them for twelve months, when it will be necessary to repeat it—the smoke will not in any degree injure the beauty of the insects.

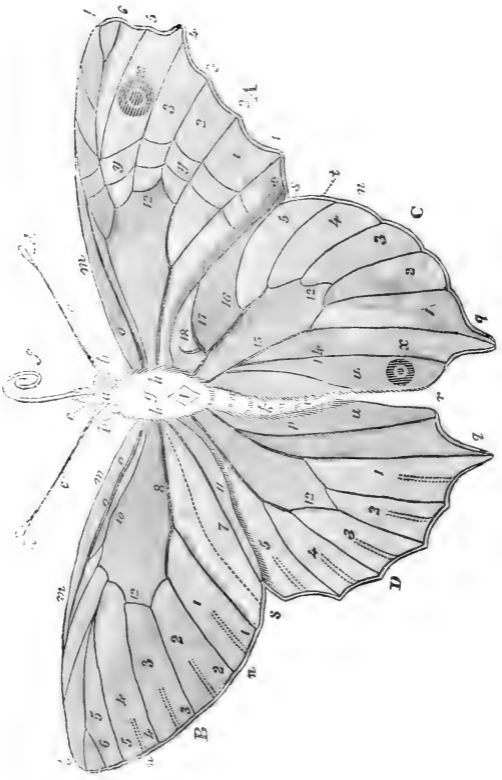
Butterflies may be easily killed, by pressing the thorax or breast, betwixt the finger and thumb and it is preferable to have the wings closed because they thus occupy less space, and their colour and lustre are better preserved—they can easily be afterwards expanded by the steam of hot water; and should be handled as little as possible, lest the delicate down to which many of them owe their

greatest beauty, should be disturbed or destroyed. They may also be killed by putting them in a glass immersed half way up in boiling water, covering the top close; or by placing them on a plate, under an inverted tumbler, and setting it before the fire a minute or two. Great care should be taken that the *antennæ* feelers or legs are not injured.—A pin should be stuck through their thorax, by the means of which they may be fixed in the bottom of a box lined with cork. Camphor ought to be put into the box.

In collecting Butterflies it is necessary to use either forceps or nets. The forceps are about ten or twelve inches in length, provided with fans of a circular or other form, and are covered with gauze; they are held and moved as a pair of scissors, and are used to catch the insects when at rest: but if they are on the wing, and within reach, a hand net will be necessary. The net is very easily made.—It is of gauze or any very fine open muslin, a yard and half square made upon a piece of cane four feet in length, split down the middle about half way—the split part is tied together, so as to form a hoop, upon which the gauze is sewed in the form of a bag; the lower part serves as a handle and with this Butterflies, and all flying insects, may be very easily caught. When the insect is once within the rim of the net, by turning it on

either side, its escape is completely prevented by the pressure of the gauze or muslin against the edge of the hoop. If they are beyond your reach, you must use a casting net, which may be made thus:—tie a weight (a half-penny for instance), in one of the corners of a piece of gauze, about the size of a common handkerchief, a lighter weight in the second corner, and a bit of very light wood in the third: the inequality in the weight and bulk of these substances, will occasion the gauze to open, when thrown from the hand: a thin piece of twine, a yard or two long, may be tied to the remaining corner, by which the net may be drawn in at pleasure. The art of spreading it to its full extent may be acquired with very little practice.

The intestines of Butterflies should be extracted, which may be done by cutting a slit with a fine pointed pair of scissors, at the extremity of the body, and gently pressing them out; a small roll of cotton or paper, dipped in antiseptic powder should then be introduced, so as to extend the body to its natural form.



T E R M S

*Used in the DESCRIPTION of the various Parts of
the BUTTERFLY, with reference to the Plate.*

<i>a</i> Head.	<i>s</i> Lower Corners of the superior Wings
<i>b</i> Eyes.	<i>t</i> Outer Corners of the in- ferior ditto.
<i>c</i> Palpi.	<i>u</i> Abdominal Edges
<i>d</i> Knobs of the Antennæ.	<i>w</i> Anus.
<i>e</i> Threads of the Antennæ.	<i>x</i> Ocelli, Eyes, or Eyelets.
<i>f</i> Tongue.	<i>y</i> Bar, Band or Garter.
<i>g</i> Thorax.	
<i>h</i> Shoulders.	
<i>i</i> Scutellum or Escutcheon.	
<i>k</i> Abdomen with its Anuli.	A Superior Wings angu- lated.
<i>l</i> Tips or Apices.	B Superior Wing, smooth or even edged.
<i>m</i> Sector Edge.	C Inferior Wing scallop- ed.
<i>n</i> Fringes.	D Inferior Wing indent- ed.
<i>o</i> Sector.	
<i>p</i> Abdominal Groove.	
<i>q</i> Tails.	
<i>r</i> Abdominal Corners.	

The interior parts of the Superior Wing described.

The Parts coloured *Green*, are the FAN-TENDONS and MEMBRANES, marked in Numerical Order; viz. 1st. 2d. 3d. &c.

PAPILIONES have only five of these MEMBRANES, and six TENDONS.

The parts coloured with *Pink*, are the Tables.

The *Pale Blue*, shews the SECTORS.

Shoulder MEMBRANE—*Yellow*.

Slip MEMBRANE—*Pale Orange*.

LONG MEMBRANE—*Purple*.

The Parts coloured *Blue*, are the SECTOR TENDONS and MEMBRANES, and it is in this part of the Wing only, wherein one GENUS differs from another.

The Grand TENDONS are three in number; viz.

- | | | |
|---------------------|---|----------------|
| 7 Long Tendon, | } | Grand Tendons. |
| 8 Principal Tendon, | | |
| 9 Shoulder Tendon, | | |
| 10 Table Tendon. | | |
| 11 Slip Edge. | | |
| 12 Bar Tendon. | | |

Interior parts of the Inferior Wing described.

Green shews the FAN-TENDONS and MEMBRANES, which are the same in number as in the superior Wings.

Pink, shews the TABLE MEMBRANE.

Blue. The SECTOR.

Yellow. TABLE MEMBRANE, or BENT ditto.

Purple. LONG MEMBRANE.

ACUTE MEMBRANE.

Pale Orange. GRAND TENDONS, three in number ;
viz.

15 POSTERIOR TENDON,	}	Grand Tendons.
16 TABLE TENDON,		
17 BENT, or FEMORAL TENDON,		

18 Spur ; this part answers to that little instrument in the Phalæna, called Spring.

13 Abdominal Tendon.

14 Long Tendon.

The several parts of the inferior Wings greatly correspond with the respective parts of the superior, yet here are no parts answerable to the Sector Tendons and Membranes, and which are distinguished with Purple in the superior ; there is another on the opposite edge of the Wing, called THE ABDOMINAL MEMBRANÆ, which is coloured Purple.

ERRATA.

Page 26, No. 17. For *Polydama* read *Polymeda*.*

* Haworth has by mistake called this *Polydama*, referring to *Scopoli*, whose name is what we have given. Fabricius has a *Polydamus* which is a different Insect.

LIST

OF

Butterflies and their Families.

* SWALLOW-TAILS.

- 1 *Machaon* Swallow-tail. † L. pl. 34.
- 2 *Podalirius*.....Scarce Swallow-tail. L. pl. 35.

** WHITES.

- 3 *Cratægi*.....Black veined White. L. pl. 24.
- 4 *Brassicæ*.....Large White. L. pl. 25.
- 5 *Rapæ*.....Small White. L. pl. 26.
- 6 *Napi*.....Green-veined White. L. pl. 27.
- 7 *Sinapis*.....Wood White. L. pl. 29. 4, 5.
- 8 *Daphidice*.....Green-chequered White. L. pl. 28.
- 9 *Cardamines*.....Orange Tip. L. pl. 30.

* * * YELLOWS.

- 10 *Edusa*.....Clouded Yellow. L. pl. 32.
- 11 *Helice*.....White clouded Yellow.
- 12 *Europome*.....Clouded Sulphur.
- 13 *Hyale*.....Pale clouded Yellow. L. pl. 33. 1, 2.
- 14 *Rhamni*..... ..Brimstone. L. pl. 31.

† L. signifies Lewin's English Butterflies.

* * * RINGLETS.

- 15 *Hyperanthus*.. Ringlet. L. pl. 20.
 16 *Davus*.....Small Ringlet. L. pl. 23. 5, 6.
 17 *Polymeda*.....Marsh Ringlet.
 18 *Typhon*.....Scarce Heath.
 19 *Pamphilus*.....Small Heath. L. pl. 23. 3, 4.
 77 *Ligea*.
 78 *Mnemon*.
 79 *Alcyone*.
 80 *Blandina*.

* * * OCELLATED.

- 20 *Io*.....Peacock. L. pl. 4.
 21 *Iris*.....Purple Emperor. L. pl. 16.
 22 *Cardui*.....Painted Lady. L. pl. 6.
 23 *Semele*.....Grayling. L. pl. 17.
 24 *Galatea*.....Marbled White. L. pl. 28.
 25 *Megæra*.....Wall. L. pl. 21.
 26 *Ægeria*.....Speckled Wood. L. pl. 19.
 27 *hampstediensis*...Albin's Hampstead Eye.
 28 *Jurtina*.....Meadow Brown. L. pl. 18.
 29 *Pilosellæ*.....Large Heath. L. pl. 22.

* * * SCALLOPED.

- 30 *C. album*.....Comma. L. pl. 5.
 31 *Urticæ*.....Small Tortoise-shell. L. pl. 3.

- 32 *Polychloros*.....Large Tortoise-shell. L. pl. 2.
 33 *Antiopa*White-bordered. L. pl. 1.
 34 *Atalanta*.....,Red Admiral. L. pl. 7.
 35 *Camilla*.....White Admiral. L. pl. 8.

* * * * * SILVER-SPOTTED FRITILLARIES.
 * * * * *

- 36 *Paphia*Silver-washed Fritillary. L. pl. 9.
 37 *Aglaia*Dark-green Fritillary. L. pl. 11.
 38 *Charlotta*Queen of England Fritillary.
 39 *Adippe*.....High-brown Fritillary. L. pl. 10.
 40 *Lathonia*.....Queen of Spain Fritillary. L. pl. 12.
 41 *Euphrosyne*....,Pearl-bordered Fritillary. L. pl.13. 1, 2.
 42 *Silene*..... Small Pearl-bordered Fritillary. L. pl.13.3,4.

* * * * * BUFF-SPOTTED FRITILLARIES.
 * * * * *

- 43 *tessellata*Straw May Fritillary.
 44 *Dictynna*.....Pearl-bordered Likeness. L. pl. 14. 5,6.
 45 *Eos*Dark under-winged Fritillary.
 46 *Cinxia*Glanville Fritillary. L. pl. 14. 3, 4.
 47 *Artemis*.....Greasy Fritillary. L. pl. 15. 3, 4.
 48 *Lucina*.....Duke of Burgundy Fritillary. L. pl.15.5,6.

* * * * * HAIR-STREAKS.
 * * * * *

- 49 *Betulae*Brown Hair Streak. L. pl. 42.
 50 *Pruni*.....Black Hair Streak.
 51 *Quercus*.....Purple Hair Streak. L. pl. 43
 52 *Rubi*Green Hair Streak. L. pl. 44.

* * * * * COPPERS.

- 53 *Dispar*.....Large Copper. L. pl. 40.
 54 *Virgaureæ*Middle Copper. L. pl. 41. 1, 2.
 55 *Chryseis*.....Purple-edged Copper.
 56 *Phlæas*.....Common Copper. L. pl. 41

* * * * * BLUES OR ARGUSES

- 57 *Arion*.....Large Blue. L. pl. 37. 1, 2.
 58 *Corydon*.....Chalk-hill Blue. L. pl. 36. 1, 2, 3.
 59 *Labienus*.....Pink Argus.
 60 *Adonis*.....Clifden Blue. L. pl. 38. 1, 2, 3.
 61 *Icarus*.....Common Blue. L. pl. 38. 4, 5, 8.
 62 *Hyacinthus*.....Light Blue. L. pl. 37. 4, 5, 6.
 63 *Argus*.....Silver-studded Blue. L. pl. 39. 5, 6, 7.
 64 *Idas*.....Brown Argus L. pl. 39. 1, 2.
 65 *Artaxerxes*.....Scotch Argus. L. pl. 39. 8, 9.
 66 *Argiolus*.....Azure Blue. L. pl. 36. 4, 5, 6.
 67 *Cymon*.....Mazarine Blue. L. pl. 38. 6, 7.
 68 *Alsus*.....Small Blue. L. pl. 39. 3, 4.

* * * * * SKIPPERS.

- 69 *Paniscus*.....Chequered Skipper.
 70 *Comma*.....Silver-spotted Skipper. L. pl. 45. 1, 2.
 71 *Sylvanus*.....Large Skipper. L. pl. 46. 1, 2, 3.
 72 *Linea*.....Small Skipper. L. pl. 45. 1, 2.
 73 *Tages*.....Dingy Skipper. L. pl. 45. 3, 4.
 74 *Malvæ*.....Grizzled Skipper. L. pl. 46. 8, 9.
 75 *Lavateræ*.....Scarce Grizzled Skipper. L. pl. 46. 4, 5.

ABBREVIATIONS.

b. } *signifies.* { beginning.
 m. } { middle.
 e. } { end.

SYNOPTICAL TABLE

OF

ENGLISH BUTTERFLIES.

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar Feeds upon.
1	<i>Machaon</i>	Swallow-tail	On Fennel and other Umbelliferous Plants and Rue
2	<i>Podalirius</i>	Scarce Swallow-tail	Cabbage
3	<i>Cratægi</i>	Black-veined White	White-Thorn, Gooseberry
4	<i>Brassicæ</i>	Large White	Cabbage
5	<i>Rapæ</i>	Small White	Cabbage & Turnip
6	<i>Napi</i>	Green-veined White	Cabbage
7	<i>Sinapis</i>	Wood White	Mustard
8	<i>Daphidice</i>	Green-chequered White	Wild-Woad, Base Rocket and Cabbage
9	<i>Cardamines</i>	Orange-Tip	Cuckoo Flower
10	<i>Edusa</i>	Clouded Yellow	Grass
11	<i>Helice</i>	White-clouded Yellow	.....

Caterpillar	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
July, Sep.	Fenny places. Catton, Acle, Norf. Cherry Hinton, Mad- ingley, Whittlesea, Cambridge.	e. May, b. Aug.	3 7
May	Woods, Bedfordshire.	May, Aug.	3 6
Spring	Gardens & Thickets.	June	2 10
Summer	Gardens.	m. May, m. Aug.	2 11
Summer	Gardens.	m. May, m. Aug.	2 2
Summer	Gardens, Woods and Thickets.	m. May, b. July	2 1
.....	Woods, Stour and Hartley Woods, and Bromley Thickets, Essex.	m. May, b. Aug.	1 8
.....	White Wood, near Gamlingay, Camb. near Hampstead, Middlesex.	Apr. May, Aug.	1 10
.....	Woods and Lanes.	e. May	1 11
Spring	Marshes, Beaumont, Essex.	Spring, m. Aug.	2 4
.....	Gardens & Meadows, Little Chelsea.	m. Aug.	2 3

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar Feeds upon.
12	<i>Europome</i>	Clouded Sulphur	.....
13	<i>Hyale</i>	Pale-clouded Yellow	Grass
14	<i>Rhamni</i>	Brimstone	Buckthorn
15	<i>Hyperanthus</i>	Ringlet	Grass, at the roots of Annual Mea- dow Grass
16	<i>Davus</i>	Small Ringlet	.....
17	<i>Polydama</i>	Marsh Ringlet	.....
18	<i>Typhon</i>	Scarce Heath	.....
19	<i>Pamphilus</i>	Small Heath	Crested Dog's tail Grass
20	<i>Io</i>	Peacock	Common Nettle

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
.....	Meadows and Road-sides, near Ipswich, Suffolk.	m. Aug.	2 3
July	.....	m. Aug.	2 2
Spring	Woods and Road-sides.	Spring, b. June, & in Autumn	2 6
.....	Woods.	e. June	1 10
.....	Marshes, near Manchester.	July	1 5
.....	Marshes, Yorkshire.	June	1 7
.....	Marshes, Yorkshire.	June	1 7
b. May, b., Aug.	Heaths, Pastures, Way-sides.	b. June b. Sept.	1 4
b. July	Woods, Fields, Roads.	Spring m. July	3 0

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar. Feeds upon.
21	<i>Iris</i>	Purple Emperor	Common Sallow
22	<i>Cardui</i>	Painted Lady	Spear Thistle
23	<i>Semele</i>	Grayling	Grass
24	<i>Galatea</i>	Marbled White	Grass
25	<i>Megara</i>	Wall	Grass
26	<i>Ægeria</i>	Speckled Wood	Grass
27	<i>hampstediensis</i>	Albin's Hampstead Eye	.....
28	<i>Jurtina</i>	Meadow Brown	Grass
29	<i>Pilosellæ</i>	Large Heath	Mouse-ear Hawk-weed

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
e. May	Woods. on the Oak. Great & Little Stour Woods. Wrabness and Ramsey, Essex. Badley, Suffolk.	b. July	3 2
m July	Field-sides and Gar- dens. Campsey Ash, Suffolk. Lexden & Wrabness, Essex.	Spring, e. July	2 7
.....	Heaths & Thickets, Rushmere Heath, Nacton Heath, and Langar Common, Suffolk. Lexden Heath, Essex.	m. July	2 5
.....	Moist Woods. Mersey Island, Stour and Hartley Woods, Essex.	b. July	2 2
b. May b. Aug.	Woods & Way-sides.	Spring, b. July, b. Aug.	1 10
March, May June.	Woods.	b. April, b. June, b. Aug.	1 10
.....	Hampstead, Middle- sex.	.....	.....
.....	Woods & Meadows.	b. June	2 0
b. June	Woods, Pastures and Commons.	m. July	1 8

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Butterfly. Feeds upon.
30	<i>C. album</i>	Comma	Hop, Nettle, Willow & Gooseberry
31	<i>Urticæ</i>	Small Tortoise-shell	Common Nettle
32	<i>Polychloros</i>	Large Tortoise-shell	Elm, and on Fruit Trees
33	<i>Antiopa</i>	White-bordered	Willow and Birch
34	<i>Atalanta</i>	Red Admiral	Common Nettle
35	<i>Camilla</i>	White Admiral	Honey-suckle
36	<i>Paphia</i>	Silver-washed Fritillary	Violet
37	<i>Aglaia</i>	Dark-green Fritillary	Violet
38	<i>Charlotta</i>	Queen of England Fritillary	.....
39	<i>Adippe</i>	High-brown Fritillary	Violet and Heartsease

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
m. June m. Aug.	Gardens & Thickets.	b. July, b. Sep.	2 0
b. June m. Aug.	Gardens and Way-sides.	Spring, b. July, b. Sept.	2 3
.....	Roads and Lanes, in the neighbourhood of Elm-trees.	m. July	3 0
Spring	Woods & Road-sides on the Oak. Little Oakley, Essex.	Spring, b. Aug. m. Sep.	3 3
Spring b. July	Woods, Hedges and Gardens.	Spring, m. July, b. Aug.	2 10
.....	Woods. near Rye, Sussex.	b. July	2 5
e. May	Woods. Lexden and Stour Woods, Essex	b. July	2 11
m. May	Heaths. Lexden, Essex. Nacton, Suff.	b. July	2 8
.....	Woody places. Bed- fordshire.	b. July	2 7
m. May	Woods. Hintlesham, Suffolk. Stour and Hartley Woods, & Bronley Thickets, Essex.	b. July	2 8

No.	Linnaean Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar. Feeds upon.
40	<i>Lathonia</i>	Queen of Spain Fritillary	Hearts ease
41	<i>Euphrosyne</i>	Pearl-bordered Fritillary	.....
42	<i>Silene</i>	Small Pearl-bor- dered Fritillary	.....
43	<i>tessellata</i>	Straw May Fri- tillary	.....
44	<i>Dictynna</i>	Pearl-bordered Likeness	.....
45	<i>Eos</i>	Dark under- winged Fri- tillary	.....
46	<i>Cinxia</i>	Glanville Fritil- lary	Ribwort Plantain
47	<i>Artemis</i>	Greasy Fritilla- ry	Devil's-bit Scabi- ous
48	<i>Lucina</i>	Duke of Bur- gundy Fritil- lary	Grass

Caterpillar.	Butterfly.		Expan
When found.	Where found.	When found.	In. lines
.....	Woods. Gamlingay, Wisbeach, Camb. near London On the Dandelion in dry pastures by a wood, in Stoke by Nayland.	e. May, b. Sep.	2 1
.....	Heaths and Woods. Stour and Hartley Woods, Essex.	May	1 10
.....	Heaths and Woods. Stour and Hartley Woods, Essex.	May, b. July	1 10
.....	Caen-wood. Middlesex.	b. May	1 9
.....	Heaths and Marshes.	b. May	1 9
.....	Heaths and Marshes	b. May	Rather less than the preceding
m. April	Meadows.	m. June	1 11
m. April	Meadows. near Norwich, Norfolk.	m. May	1 10
.....	Woods. and Hedges near Camb. Hintlesham, Suff.	e. May	1 4

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar. Feeds upon.
49	<i>Betulæ</i>	Brown Hair-streak	Birch, Black-Thorn
50	<i>Pruni</i>	Black Hair-streak	Plumb Tree
51	<i>Quercus</i>	Purple Hair-streak	Oak
52	<i>Rubi</i>	Green Hair-streak	Bramble
53	<i>Dispar</i>	Large Copper	.....
54	<i>Virgaureæ</i>	Middle Copper	Grass
55	<i>Chryseis</i>	Purple-edged Copper	.....
56	<i>Phlæas</i>	Common Copper	.....
57	<i>Arion</i>	Large Blue	.....
58	<i>Corydon</i>	Chalk-hill Blue	Wild Thyme

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
e. June.	Birch Woods.	m. Aug.	1 6
b. July.	Gardens and Hedges Wrabness, Essex.	e. June	1 5
b. June	Tops of Oak and Ash Trees, Wrab- ness, Essex.	m. July	1 5
Spring b. July	Hedges & Bramble.	e. May, b. Aug.	1 3
.....	Reedy marshes, Bar- dolph Fen, Norfolk, & Whittlesea Mere.	e. July	2 0
.....	Marshes, on the Com- mon Golden Rod, Isle of Ely, and Huntingdonshire.	e. Aug.	1 6
.....	Marshes, Epping Fo- rest, Essex, Ash- downham, Sussex.	Autumn	1 5
.....	Commons, Pastures and Field-sides.	b. April, b. June b. Aug.	1 4
.....	Commons, Broomham, Bedfordshire, and Dover Cliffs.	b. July	1 7
.....	Chalk-pits, Little Blakenham, Suffolk.	b. July	1 6

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar Feeds upon.
59	<i>P. Labienus</i>	Pink Argus	.....
60	<i>Adonis</i>	Clifden Blue	.....
61	<i>Icarus</i>	Common Blue	Grass
62	<i>Hyacinthus</i>	Light Blue	.....
63	<i>Argus</i>	Silver-studded Blue	Grass
64	<i>Idas</i>	Brown Argus	Grass
65	<i>Artaxerxes</i>	Scotch Argus	.....
66	<i>Argiolus</i>	Azure Blue	Grass
67	<i>Cymon</i>	Mazarine Blue	.....
68	<i>Alsus</i>	Small Blue	.....

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
.....	Pastures, Wrabness, Esséx.	b. Aug.	1 1 $\frac{1}{2}$
.....	Chalky soils.	e. May, m. Aug.	1 5
e. April, e. July	Pastures.	e. May, e. Aug.	1 4
.....	Chalky soils	m. July	1 4
e. April	Commons, Fields & Marshes.	m. July	1 3
e. April, e. June	Fields.	e. May, m. July	1 2
.....	Meadows, Scotland.	e. July	1 1
.....	Woody places and Meadows.	m. May, e. Aug.	1 5
.....	Chalky soils, Norfolk, Yorkshire & Sher- borne, Dorsetshire	m. May, e. July	1 4
.....	Fields.	e. May, b. July	1 0

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Caterpillar Feeds upon.
69	<i>Paniscus</i>	Chequered Skip- per	.....
70	<i>Comma</i>	Silver-spotted Skipper	.....
71	<i>Sylvanus</i>	Large Skipper	.....
72	<i>Linea</i>	Small Skipper	.....
73	<i>Tages</i>	Dingy Skipper	.....
74	<i>Malvæ</i>	Grizzled Skipper	.....
75	<i>Lavateræ</i>	Scarce-grizzled Skipper	.....

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
.....	Meadows and Woody places and near Bedford.	e. May	1 3
.....	Chalky soils near Lewes in Sussex.	e. Aug.	1 3
.....	Woods	e. May, e. July	1 4
.....	Margins of Woods.	m. July	1 2
.....	Dry Heaths, Banks, Woods and Commons, Hintlesham, Suffolk, Norfolk, near London.	b. May	1 3
.....	Dry Banks, Woods & Commons. Hartley Wood, Essex.	e. May	1 1
.....	Commons.	e. May	1 1

No.	Linnæan Name. <i>Papilio.</i>	English Name. Butterfly.	Butterfly. Feeds upon.
76	<i>Chrysothome</i>		.....
77	<i>Ligea</i>		.....
78	<i>Mnemon</i>		.....
79	<i>Alcyone</i>		.....
80	<i>Blandina</i>		.....
81			
82			
83			
84			

Caterpillar.	Butterfly.		Expan.
When found.	Where found.	When found.	In. lines
.....		
.....	Isle of Arran, Scot- land.		
.....	Between Ambleside & Winandermere.		
.....	Scotland.		
.....	Isle of Arran, Scot- land.		



A DESCRIPTION
OF THE
BUTTERFLIES

Enumerated in the Synoptical Table.

1. *P. Machaon*. This is the largest and one of the most beautiful Butterflies, which Britain produces, and may be considered as the only British species of *Papilio*, excepting the *P. Podalirius*, (the existence of which in England is extremely doubtful) belonging to the tribe of *Equites*.

It is commonly known among the English Collectors by the title of the Swallow-tailed Butterfly, and is of a beautiful yellow, with black spots or patches along the upper edge of the superior wings; all the wings are bordered with a deep edging of black, decorated by a double row of crescent-shaped spots, of which, the upper row is blue, and the lower yellow. The under wings are tailed and are marked at the inner angle or tip with a round red spot bordered with blue and black.

The Caterpillar, of this species, is of a green colour, encircled with numerous black bands spotted with red; and is furnished on the top of the neck with a Y-shaped organ of a red colour, which it occasionally protrudes from that part. It emits a very disagreeable smell by which it keeps off the ichneumon. It feeds principally on fennel and other umbelliferous plants, and is sometimes found on rue.—The Caterpillar is solitary, or seldom found in numbers together. In the month of July it changes into a yellowish-grey angular Chrysalis affixed to some convenient part of the plant, or other neighbouring substance, and from this Chrysalis, in the month of August, proceeds the complete insect. It sometimes happens that two broods of this Butterfly are produced in the same summer; one in May, having been in the pupa state all the winter, the other in August, from the Chrysalides of July.

2. *P. Podalirius*. Wings tailed, both surfaces nearly alike, yellowish, with double brown bands and margin; lower ones with five blue ocellated spots, and a reddish line beneath. It feeds on different species of the *Brassicæ*. Caterpillar solitary, yellowish, dotted with brown; head pale green. Chrysalis, yellowish dotted with brown, marked

with two slight projections towards the anterior extremity.

3. *P. Cratægi*. Wings entire, white, with black veins. This is called the Hawthorn Butterfly, and is well-known in this country. It is the size of the common Cabbage Butterfly. Caterpillar, gregarious, hairy and yellow, green beneath ; head black ; body marked with three black lines.—Chrysalis, greenish with black spots and dots. It feeds on fruit-trees, and is very destructive in gardens and orchards.—This species as well as *P. Urticæ* and *P. Polychloros*, emits a fluid of a reddish colour which has frequently given rise to the reports of showers of blood which are said to have fallen in different places.

4. *P. Brassicæ*. The wings of this insect are rounded, entire, white ; tip of the upper part brown, marked with two black spots. The upper wings in the male are without black spots. This is the common large white Butterfly known in our gardens.

The Caterpillar is solitary, yellowish, dotted with blueish and black spots, and marked with three sulphur-coloured lines ; the tail black. Chrysalis, pale-green, marked with three yellow lines, and three of its segments globular affixed in a perpendicular direction to some wall or tree or other

object, some filaments being drawn through the thorax, in order more conveniently to secure its position. Eggs set in clusters.

5. *P. Rapæ*. Wings entire, white; upper pair tipt with brown. Male with a brown spot on each, female with three brown spots on the upper, and one on the lower pair. This is common in our own country.

Larva, green; marked with a bright yellow line on the back, and bright yellow on the sides. Pupa, greenish, marked with three sulphur coloured lines.

6. *P. Napi*. Wings entire, with dilated green veins beneath. It inhabits Europe and Asia.

7. *P. Sinapis*. Wings entire, roundish, white; upper pair tipt with brown. This and the three preceding are the insects which in the Caterpillar or grub state commit such ravages in our gardens.

8. *P. Daplidice*. Wings entire, white with a brown margin, beneath marked with yellowish-white and green. It inhabits Europe and Africa, but is uncommon here.

Larva, covered with blueish hairs, marked with black spots and yellow streaks.

9. *P. Cardamines*. Wings entire, white ; upper pair of the male, with a large bright orange patch at the tip, including two black dots ; the lower ones beneath marbled with green ; the female is without the orange tip.

Larva, solitary, greenish above and whitish beneath. Pupa, green, marked with a white line on each side ; thorax conical ascending.

10. *P. Edusa*. Wings entire, fulvous, with a black dot and margin ; beneath greenish, upper pair with a black dot ; lower with a silvery one.

11. *P. Helice*. Wings entire ; above, white, with a black dot and border ; beneath, upper pair with a white disk ; lower pair yellowish with a silvery ocellar spot and smaller contiguous one. Rare.

12. *P. Europome*. Wings entire ; above, yellow with a black dot and border ; beneath, yellowish, the upper pair having a black spot, the lower pair two silvery contiguous ones, one of them larger than the other. Rare.

13. *Hyale*. Wings entire, yellow, the tip black spotted with white ; lower ones with a fulvous spot, a silvery dot with a smaller contiguous one beneath.

In the male the margin of the wings is immaculate, in the female it is spotted.—Shaw calls this the Fern Butterfly, and describes it as a beautiful species with orange-yellow wings, bordered with black.

14. *P. Rhamni*. Wings entire, angular, bright yellow, each marked with a ferruginous dot in the middle. Shaw names this elegant insect the Buckthorn Butterfly, and describes it of “ a bright sulphur colour with sharp cornered wings, marked by a small orange spot in the middle of each.” It commonly flies about in August, though frequently it lies dormant all winter and appears early in Spring; the male is very often of a sulphur-colour, and the female white.

Caterpillar, smooth, green with a dark line on the back. Chrysalis, in the anterior part turgid, and drawn to a point.

15. *P. Hyperanthus*. Wings entire, dark brown; under side of the upper pair with three eyes; the inferior surface of the lower ones with five. The wings have sometimes ocelli on their upper surfaces.

Caterpillar, solitary, hairy, and of an ash colour, marked with a black line behind; the tail furnished

with two little prominences. Chrysalis, brown, spotted with yellow and has a hunch on its back.

16. *P. Davus*. Wings very entire, fulvous; upper pair with an eye, and white bands beneath; lower ones with six eyes.

17. *P. Polymeda*. Wings indented, black, bronzed with a spotted ocellar band, the lower ones with flexuous red lunules beneath. This is found on the *Caprifolium* and *Lonicera xylosteum*.

18. *P. Typhon*. Wings entire; above, greyish fulvous without spots. Beneath, upper pair adorned with 1-2 eyes; the lower pair with 2-5 obsolete ones. Rare.

19. *P. Pamphilus*. Wings very entire, yellow, under side of the upper ones with a single eye; (occasionally double pupilled) the inferior surface of the lower ones cinereous, with a band, and four obliterated eyes.

20. *P. Io*. Peacock Butterfly, so called on account of its eyes and great beauty. It is rather a common species in this country. The wings are angular, indented, fulvous, spotted with black, and on each

there is a large blue eye. “The ground colour of this insect” says Dr. Shaw, “is orange-brown with black bars, separated by yellow intermediate spaces, on the upper edge of the superior wings ; while at the tip of each is a most beautiful large eye-shaped spot, formed by a combination of black, brown, and blue, with the addition of whitish specks ; on each of the lower wings is a still larger eye-shaped spot, consisting of a black central patch, varied with blue, and surrounded by a zone of pale-brown, which is itself deeply bordered with black.”

Caterpillar, gregarious, black with numerous white spots and black ramified spines, the hind legs of a rusty colour, it feeds principally on the nettle. Chrysalis, green, dotted with gold, having ten small projections on the fore part of the body ; the tail divided.

21. *P. Iris*. Wings indented, brown, with a blue gloss, and whitish interrupted band on each side ; all with a single eye, those on the upper pair above, blind. This is described and figured by Donovan and Lewin.

22. *P. Cardui*. Wings indented, fulvous, variegated with white and black ; the lower ones have four eyes beneath.

Caterpillar, spiny. Chrysalis, suspended by its tail.

23. *P. Semele*. Wings indented, brown, with a macular fulvous marginal band, in which are two eyes; upper pair with a fulvous disk at the base beneath. Inhabits heaths and rocky wastes.

Caterpillar, downy, with a globular head, somewhat compressed in front. Chrysalis, angulated with the front bimucromate suspended by the tail.

24. *P. Galathea*. Wings indented, varies with brown and yellowish-white; under surface of the upper one with a single eye, of the lower ones with five.

Caterpillar, downy, with a globular head, compressed in front. Chrysalis, angulated suspended by the tail.

25. *P. Megæra*. Wings indented, yellowish-brown with dark bands; upper pair with a single eye; lower ones with five eyes above, and six beneath. This is found in our own country, and has been described and figured by Mr. Donovan

Caterpillar, hairy, green striped with white; the tail divided.

26. *P. Ægeria*. Wings indented, brown, spotted with yellow; upper pair with an eye on each side;

lower ones with four eyes above, and dots beneath. This is described in Lewin's Butterflies.

27. *P. Hampstediensis*. Size and form of *P. Ægeria*. Wings entire; above, upper pair dark brown, with five spots and marginal streak yellow; two large eyes having white pupils and broad black irides; lower pair brown, with a marginal-yellow streak; two eyes with white pupils and black irides; beneath, upper pair yellowish, clouded with dark brown, having an obsolete streak composed of dark brown lunular spots. Lower pair yellowish a little clouded towards the base with dark brown; have a small and nearly obliterated eye with a black iris; four dark brown spots, between which and the posterior margin is a streak composed of dark brown lunular spots. Rare. It has not been taken since the time of Petiver.

28. *P. Jurtina*. Wings indented, brown, upper pair beneath yellow, with a single eye on each side; lower ones with three dots beneath. In the female the upper pair of wings has a yellow patch, including a single eye on each side.

Shaw, considers this insect as equally common, though far less beautiful than *P. Io*, and says it is chiefly observed in meadows, and is of a brown colour,

the upper wings having a much brighter or orange-ferruginous bar towards the tips, with a small, black eye-shaped spot with a white centre: on the opposite or under side of the insect, the same distribution of colours takes place.

29 *P. Pilosellæ*. Wings indented, brown with a yellowish disk, upper pair with a black eye, and double pupil on each side; lower ones with snowy eyelike spots beneath.

30. *P. C. Album*. Wings angular, fulvous, spotted with black; lower ones beneath marked with a white C.

31. *P. Urticæ*. Wings angular, fulvous, spotted with black; upper pair with three black dots, the inner one square.—It is very common in this country, and has been described and figured by Donovan and Lewin.

The Caterpillar is gregarious, spinous, varied with brown and green; head black. Chrysalis, angular brown, marked with small projections with gold dots on the neck, and sometimes entirely of a golden colour.

32. *P. Polychloros*. Wings indented, fulvous,

spotted with black, upper pair with four black dots above.

33. *P. Antiopa*. Wings angular, indented, black-brown, with a whitish border, behind which is a row of blue spots—*rare*. This insect feeds upon Salices and Betula.

34. *P. Atalanta*. Wings indented, black, upper pair with a red band and white spots, the lower ones bordered with red behind. This as the Admiral Butterfly, has been described and figured by Lewin, Donovan and Dr. Shaw. The latter says it is of the most intense velvet black colour, with a rich carmine-coloured bar across the upper wings which are spotted towards the tips with white; while the lower wings are black with a deep border of carmine colour, marked by a row of small black spots, the under surface of the wings also presents a most beautiful mixture of colours; the caterpillar is brown and spiny, feeds on nettles, and changes into a chrysalis in July, the fly appearing in August.

35. *P. Camilla*. Wings indented, dark brown, with a white band and dots on each side; lower ones silvery blue at the base.—Caterpillar, elongate.

Chrysalis, suspended by the tail.—Rare, except in Charlton Wood, Kent, where it is found in great plenty.

36. *P. Paphia*. This is a highly elegant insect, of a fine orange-chesnut colour above, with numerous black spots and bars; beneath, greenish, with narrow silvery undulations on the lower wings, and black spots on the upper. It proceeds from a yellowish-brown spiny caterpillar, living principally on nettles. This insect is generally found in the neighbourhood of Woods. There is a variety cinereous, spotted with black peculiar to Russia.

37. *P. Aglaia*. Wings indented, fulvous, spotted with black, beneath it has twenty-one silvery spots. This is found in England, and other parts of Europe.—Caterpillar, spiny. Chrysalis, suspended by the tail.

38. *P. Charlotta*. Size and form of *P. Aglaia*, but differs in the upper pair of wings, having beneath, four black costal spots instead of five. And in the lower pair, having beneath, nineteen silver spots instead of twenty-one—of which, the three anterior ones are three times larger than in that species. Rare.

Caterpillar, spiny. Chrysalis, suspended by the tail.

39. *P. Adippe*. Wings indented, fulvous, spotted with black; beneath there are twenty-eight silvery spots. Caterpillar, spiny. Chrysalis, suspended by the tail.

40. *P. Lathonia*. Wings slightly indented, pale, fulvous, spotted with black; beneath with thirty-seven silvery spots.—Caterpillar, spiny. Chrysalis, suspended by the tail. This is the most beautiful British Fritillary.

41. *P. Euphrosyne*. Wings indented, pale, fulvous, spotted with black; beneath with nine silvery spots. Caterpillar, pubescent, with fleshy tubercles. Chrysalis, suspended by the tail.

42. *P. Silene*. Wings indented, fulvous with black; lower ones beneath, with twelve silvery spots; a distinct black dot at the base and streak behind.

43. *P. Tessellata*. In size and shape very similar to *P. Dictynna*, which it resembles also in the upper surface of its wings; beneath, the upper pair are more fulvous than in that species; lower pair, straw-coloured with black veins, but near the base

have three large square yellowish spots surrounded with black; a band in the middle, composed of many yellowish spots of a form inclining to square, and surrounded with black; a streak of black lunules; a marginal band of yellowish spots also encircled with black, each yellow spot having a black lunule; lastly they are ciliated with white, the *cilia* being intersected with black veins.

44. *P. Dictynna*. Wings indented, black, with fulvous spots; lower ones beneath fulvous, with white spots at the base, and band in the middle; the tip with yellow lunules.

45. *P. Eos*. Rather less than *P. Dictynna*, above, upper pair fulvous, with black veins, blotches, waved streak and band: lower pair black, with waved streak, consisting of six square fulvous spots, one of which is bifid; beneath, upper pair fulvous, with two square black spots; a broad black band intersected by fulvous veins; a streak composed of black confluent lunules; and a narrow black marginal streak: lower pair fulvous at the base, with about eight square contiguous black spots; in the middle an undulated white band intersected by black veins; behind that band, a streak of fulvous lunules with black margins; then a waved streak

of black lunules; and lastly, a narrow marginal black streak. All the wings are ciliated with black and white as in *P. Dictynna*. Rare.

46. *P. Cinxia*. Wings indented, black with fulvous spots; lower ones with three whitish bands, dotted with black beneath. Rare.

47. *P. Artemis*. Wings indented, fulvous variegated with black; lower ones with a streak of black dots on each side.

48. *P. Lucina*. Wings indented, brown with testaceous spots; lower ones with two rows of whitish spots beneath.

49. *P. Betulæ*. Wings slightly tailed, brown; beneath, yellowish with two white streaks on the lower ones. Shaw describes this a small species, of a blackish-brown colour with a broad orange bar on the upper wings, the lower pair being slightly produced into two orange-coloured tails or processes towards the inner corner.

50. *P. Pruni*. Wings slightly tailed, above brown, with a red spot at the tip of the lower ones; lower wings beneath, with a fulvous marginal band dotted with black.

51. *P. Quercus*. Wings slightly tailed, blueish, beneath cinereous, with a white streak, and double fulvous spot near the tail.

52. *P. Rubi*. Wings slightly tailed, above brown, beneath green.

53. *P. Dispar*. Wings above, bright copper colour with black spots and margin; beneath, lower pair pale blue, with many subocellar spots, and copper coloured margin. Rare.

54. *P. Virgaureæ*. Wings subangular, fulvous, edged with black, beneath with black and white dots.

55. *P. Chryseis*. Wings bright copper with a purplish margin, lower ones slightly indented, beneath dull grey, with numerous ocellar dots. *Extremely rare*.

56. *P. Phlæas*. Wings entire, fulvous, dotted with black, beneath blueish.

57. *P. Arion*. Wings above blue, edged with brown, and spotted with black; beneath, grey, with numerous small eyes.

58. *Corydon*. Wings entire, blue, edged with black; beneath, cinereous with black ocellar dots, lower ones with a white central spot.

59. *P. Labienus*. Antennæ black, girdled with white, their clubs being brown with black rings; above pink blue; upper pair of wings have the anterior margin white without cilia, exterior margin dark brown with very short cilia; lower pair bordered with dark brown, and edged with short white cilia; beneath, both pair of wings at their bases are dark with pearly scales. Upper pair with nine ocellar, six subtriangular, and six subocellar black spots; lower pair with eleven ocellar spots ranged in the form of a triangle, having in their centre a large triangular white spot with a black pupil; also eight triangular black marks, and seven subocellar black spots. This species has no fulvous spots beneath. Rare.

60. *P. Adonis*. Wings entire, blue, with a black marginal streak, beneath cinereous, with numerous ocellar dots and a white central spot in the lower ones.

61. *P. Icarus*. Wings entire, above with brown bands beneath with alternate white and black bands.

62. *P. Hyacinthus*. Wings entire, blue, lower ones beneath, with a marginal row of red eyes, and a circle of black ones on the disk.

63. *P. Argus*. Wings entire, lower ones beneath with a ferruginous border and silvery blue eyes.

64. *P. Idas*. Wings indented, brown, with a yellow disk; the upper pair with a black bipupillate eye on each side, the lower ones varied with grey beneath.

65. *P. Artaxerxes*. Wings entire, brown, upper pair with a white dot in the middle; lower ones with rufous marginal lunules, beneath with rufous and white dots on the margin.

66. *P. Argiolus*. Wings entire, blue, edged with black; beneath, blueish-grey, spotted with black.

67. *P. Cymon*. Wings above, blue, with a black marginal line; beneath, with one common streak of ocellated spots. Female, above, entirely black with cinereous cilia. Rare.

68. *P. Alsus*. Wings entire, brown, immaculate, beneath cinereous, with a streak of ocellate dots.

69. *P. Paniscus*. Wings divaricate, dark brown with fulvous spots.
70. *P. Comma*. Wings entire, divaricate fulvous, with a black line on the upper pair, beneath spotted with white.
71. *P. Sylvanus*. Wings divaricate, dark orange, with square yellow spots above, and whitish ones beneath.
72. *P. Linea*. Wings entire, divaricate fulvous, edged with black.
73. *P. Tages*. Wings entire, denticulate, brown, with obsolete white dots.
74. *P. Malvæ*. Wings entire, divaricate, brown with cinereous waves; upper pair with hyaline dots, lower ones with white dots beneath.—Shaw describes it of a blackish or brown colour, with numerous whitish or semi-transparent spots.
75. *P. Lavateræ*. Wings entire, brown; upper pair with white spots, lower ones with white dots; all with a snowy lunule in the middle.

P. Ligea. Wings dentated brown, with a rufous band: the anterior having four eyelets on both sides, the posterior three, the latter also spotted with white.

P. Mnemon.

P. Alcyone. Wings dentated brown, banded with yellow: the anterior having two eyelets on both sides, the posterior marbled underneath.

P. Blandina. Wings dentated, brown: with a rufous ocellated band; the posterior brown underneath; with a cinereous band.

The following Butterflies are enumerated in Rees' Cyclopædia, but their existence as *British* is doubtful.

P. Arcanius. Wings very entire, ferruginous; under surface of the upper ones, with a single eye; of the lower ones, with five, separated by a band.

P. Hero. Wings very entire, fulvous, under surface of the upper pair with a single eye, of the lower one with six.

P. Phædra. Wings indented brown; both sides alike, upper pair with two violet eyes.

P. Matura. Wings indented, varied with fulvous and black; lower ones beneath with yellow bands, and waved black streaks, the base impunctured.

P. Dia. Wings fulvous, spotted with black, lower ones beneath purple, the base with yellow and silvery spots, and an obsolete silvery band in the middle.

EQUITES. GREEKS.

P. Levana. Wings denticulated, variegated, beneath reticulate, upper ones with a few white spots.

HESPERIA, RURALES.

P. Titus. Wings entire, brown, immaculate; lower ones ocellate beneath, and a macular fulvous streak behind.

P. Hippothöe. Wings entire, orange edged with black and white; beneath cinereous, with numerous black ocellar dots. Inhabits the fens of Cam-

bridgeshire, and has been observed near Aberdeen in Scotland.

HESPERIA, URBICOLÆ.

P. Thaumias. Wings divaricate, orange, with a darker patch at the base, the upper pair, in the male, with a black line in the middle.

P. Fritillum. Wings entire, divaricate, black dotted with white.

NYMPHALES.

P. Mæra. Wings notched, brown; the upper marked on both surfaces with one eyelet, and the under with five eyelets on the superior, and six on the inferior surface—A native of Europe; on pasture ground. Caterpillar hairy, green, striped with white; the tail divided.



As the reader may wish to know the names, as far as they relate to those enumerated in the preceding list, of those genera and subgenera into which modern Entomologists have sub-divided the the original Linnæan genus *Papilio*, they are, by the favor of the Rev. Wm. Kirby, here subjoined; adding, as far as they could be ascertained, the peculiar characters which distinguish the *eggs*, *caterpillars*, and *chrysalises* of each kind, which it is trusted will enable the collector to detect them under every form.

N. B. The numbers refer to those in the table.

Order LEPIDOPTERA.

Section DAYFLIERS.

1—2. PAPILIO. *Egg* unknown.

Caterpillar naked, with a Y-shaped scent-organ, issuing from its neck when alarmed.

Chrysalis angular, girted (a); head-case eared (b). Sepp. I. ii. pl. iii.

(a) That is called a *girted* Chrysalis, which is suspended by a silken thread, round its body.

(b) The *eared* head-piece terminates in a *pair* of processes somewhat like *ears*.

3. PIERIS. *Egg* unknown.
Caterpillar subfusiform, hairy, subtuberculated.
Chrysalis angular, girted; head-case beaked with an obtuse beak (c). De Geer i. Pl. xiv. Fig. 13—19. Hübn. *Schmet.* Pl. lxxix. c. a, b.
- 4—3. PONTIA. *Egg* ovate, acuminate, many-ridged.
Caterpillar subfusiform, downy, sometimes tuberculated.
Chrysalis angular, girted, head-case beaked with a sharp beak. Sepp. I. ii. Pl. i, ii, iv.
- 9—13. COLIAS. *Egg* unknown (d).
Caterpillar naked, tuberculated.
Chrysalis subangular, hunched girted; head-case beaked, with a long beak. Merian *Surinam*: Hübn. *Schmet.* Pl. lviii. c. d.
14. GONEPTERYX. *Egg* unknown.
Caterpillar naked.
Chrysalis subangular, hunched, loosely girted: head-case beaked, with a sharp beak. De Geer i. Pl. xv. Fig. 1.—11. Hübn. *Schmet.* Pl. lxxxviii. c. d.

(c) The *beaked* head piece terminates in a *single* process.

(d) *Papilio Cardamines* is usually taken for a *Pontia*, but the hunch of the *Chrysalis* shews that it belongs rather to *Colias*.

- 15--19. **HIPPARCHIA.** *Egg* various (e).
 23--29. *Caterpillar* subfusiform, tuberculated;
 76--79. tail bifid.
Chrysalis subangular, suspended (f);
 head-case eared. Sepp. I. i. Pl. iii—vi.
- 20--22. **VANESSA.** *Egg* oval, many-ridged, umbilicated
 30--34. *Caterpillar* spinose.
Chrysalis angular, suspended; head-case
 eared. Sepp. I. i. Pl. ii, vii.
21. **APATURA.** *Egg* unknown.
Caterpillar horned at the head.
Chrysalis angular, suspended; head-case
 eared (g). Hübn. *Schmet.* Pl. xxv. E. c.
35. **LIMENITIS.** *Egg* unknown.
Caterpillar long, spinose or setose, tuber-
 culated.
Chrysalis subangular, hunched, suspended;
 head-case beaked (h). Hübn. *Schmet.*
 Pl. xxii. D. b.

(e) In this genus sometimes (*H. Pilosella*, Sepp. I. i. Pl. iii. Fig. 2.) the egg is subconical, many-ridged, with the vertex truncated: at others (*H. Hyperanthus*, Sepp. I. i. Pl. iv. Fig. 2) it is subglobose, without ridges, and covered with little punctures. In some (*H. Jurtina*, Sepp. I. i. Pl. v. Fig. 2.) it is of the same shape as the last named, but it is many-ridged, and scaly at the vertex: and lastly in others (*H. Aegeria*, Sepp. I. i. Pl. vi. Fig. 2.) the form remains the same but the surface resembles net work.

(f) By this term it is meant that the chrysalis is suspended by its tail.

(g) *N. Dict. D'Hist. Nat.* xxiii. 149. (h) *Ibid.* 146.

- 36--40. ARGYNNIS. *Egg* conical, subumbilicate, many-ridged, vertex rounded.
Caterpillar spinose.
Chrysalis subangular, suspended; head-case notched. Sepp. II. i. Pl. i.
- 41--48. MELITÆA. *Egg* unknown.
Caterpillar spinose, pubescent.
Chrysalis subangular, suspended; head-case rounded. De Geer ii. Pl. i. Fig. 10—18. Hübn. *Schmet.* Pl. i. A. a.
- 49--52. THECLA. *Egg* unknown.
Caterpillar onisciform (i), short, flat.
Chrysalis girted, head-case rounded. Reaum. i. Pl. xxviii. Fig. 1—7. Hübn. *Schmet.* Pl. lxxii. A. a.
- 53--68. LYCÆNA. *Egg* unknown.
Caterpillar onisciform, flat.
Chrysalis girted, head-case rounded. De Geer i. Pl. iv. Fig. 9—15. Hübn. *Schmet.* Pl. lxiv. A. a, a.
- 69--75. HESPERIA. *Egg* unknown.
Caterpillar naked, or pubescent, fusiform (k).
Chrysalis inclosed in a cocoon, head-case rounded notched (l). Reaum. i. Pl. xi. Fig. 6—12. Hübn. *Schmet.* Pl. xcv. E.

(i) Caterpillars are so called when they somewhat resemble an *Oniscus* or wood-louse.

(k) Thickest in the middle, and tapering gradually to each end.

(l) These caterpillars fasten leaves together with silk like many moths, and in them undergo their metamorphosis, inclosed in a slight cocoon.

Finis.





