

A
D E C A D E
O F
C U R I O U S I N S E C T S :

SOME OF THEM NOT DESCRIB'D BEFORE:

S H E W N I N

T H E I R N A T U R A L S I Z E ;

A N D A S T H E Y A P P E A R E N L A R G ' D B E F O R E

T H E L U C E R N A L M I C R O S C O P E ;

In which the SOLAR APPARATUS is artificially illuminated.

With their HISTORY, CHARACTERS, MANNERS,
and PLACES of ABODE;

On TEN QUARTO PLATES, and their Explanations.

DRAWN AND ENGRAVED FROM NATURE.

By J. HILL, M. D.

MEMBER OF THE IMPERIAL ACADEMY.

L O N D O N :

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of the Cuts on Royal Paper printed pale for that purpose.

172
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I N S E C T S,
ENGRAVED FROM NATURE.

C L A S S I.

THOSE WHICH HAVE
FOUR GAUZY WINGS,
AND
A WEAPON IN THE TAIL.

BY Gauzy Wings, we understand such as are thin, tender, and transparent: not crusty, as the Beetles; nor leathery, as the Crickets; nor dusty, as the Moths and Butterflies; but *clear*. Such are the wings of common Flies.

G E N U S I.

S A W - F L Y.

T E N T H R E D O.

Character of the Genus.

The MOUTH is form'd of Jaws; and has no Trunk.

The SCUTCHEON, has two small, distant, elevated points, on its hinder part.

The WINGS lie plain; but are a little puff'd up, and uneven.

The WEAPON at the tail is short; and form'd of two plates, jagged like a Saw; and hollow'd lengthwise in the Female. Plain in the Male.

Plate I. *a b c d.*

All two-wing'd Flies have a pair of Plumets behind their Wings; rising from under a bloated Scale. Those swellings in the Saw-Fly seem to be such Scales not open'd; and never disclosing any Plumets.

Nature does all things regularly; and makes her advances by equal and gradual degrees: and this seems her gradation from the two-wing'd to the four-wing'd Classes of Insects; the first in which the Plumets cease.

We shall find throughout her universal regions, that creatures differ by equidistant steps from one another; and that this difference, this advance of Species above Species, is all her laws allow. All real knowledge of her works is, and for ever will be, confined to this; the knowing and establishing the differences of one Species from another: Classes, and Genera, tho' useful, are arbitrary; ideas of mens minds; that exist not in nature.

To know these characters of difference, is all: but the parts which mark them; the greater, as well as the lesser; are so imperfectly seen in the smaller Insects, that their names, or kinds, often cannot be known; nor does the mind perceive the wonders of the Creator display'd in these his creatures. 'Tis therefore they are here represented both in their natural size; and as they appear before a small, but distinct magnifying power: and that way only they can be either well known, or justly admir'd.

L. MOURN-

I.

M O U R N I N G S A W - F L Y.

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

Plate 1.

Character of the Species.

The ANTLERS have seven joints, and are all the way of a thickness.

The HEAD and Trunk are red ; the Body is black.

Plate 1. a.

This pretty, quiet, melancholy Fly is found among Alder Plantations ; and is often fatally entangled in the clammy juice, that oozes from their Leaves. I caught it this last May, by the road-side, near Uxbridge.

Its HEAD is of the finest scarlet:

The *Eyes* are blue.

The *Antlers* are of a dusky brown, and hairy.

The *Feelers* short, and pale.

The *Mouth* is arm'd with hard and crusty jaws.

Its TRUNK is scarlet above, and of a ruddy brown below.

The *Scutcheon* is of a deeper red.

The *Points* on it are blue.

The BODY is coal-black above, and greyish black below.

Its *Rings* are divided by lines, form'd of a deep brown membrane joining them.

Its *Air-boles* are of a dead brown.

The LEGS are grey ; they are all of a length, and have two claws.

The WINGS are of a pale yellowish brown, with little yellow rifings on the ribs, and an edge of deeper yellow.

The TAIL is of a deep brown,

The

The STING or Saw which terminates it, is flattened, and thin, and of a chestnut brown; saw'd in the Female, plain in the Male. On pressing the body of the Fly between the fingers, it may be forc'd out farther, a little from the vent.

This is the *Tenthredo-Alni*, of the *Systema Naturæ* of Linnæus. Perhaps also, it is the *Tenthredo Ovata* of the same work; for Insects are not so numerous, as 'tis the custom now to think them: and colour, tho' an obvious, is no certain character among these creatures: in some it differs with the season; in others, with the sex; in all, it glows according to the creature's health and vigour: in most, it is exalted in the time of courtship, as the feathers on the necks of some Fowls; and in some, it fades, and is lost utterly in dying, as the colours of many fishes.

This pretty Fly rises from a yellow Worm with a black head, and twenty little feet; frequent in summer on the Alders, and bury'd under ground all winter for its change: in May we see it perfect.

'Twere well if we knew all the Insects, as this is known; but 'tis only a small part that have been trac'd so thoroughly; where they have, it makes a great addition to their history: but where the eye has not distinctly seen it, 'tis best to be silent. They who relate their errors and conjectures, under the seeming face of knowledge, deceive, and are deceiv'd.

H. MOTTLED

DSI

Tenthredo



Mourning Saw-fly

Tenthredo luctuosa

II.

M O T T L E D S A W - F L Y .
T E N T H R E D O V A R I E G A T A .

Plate 2.

The ANTLERS have more than twenty joints ; and grow small to the point.

The HEAD is blue ; the Trunk is deep grey, mottled with yellow ; the BODY is black.

Plate 2

This is a very strange and delicate Fly : 'tis found in damp woods and moors in August and September.

The HEAD is of a shining blue.

The *Eyes* are green.

The *Antlers* are amber-colour'd.

The *Feelers* short, and brown.

And the *Jaws* of a yellow brown.

The TRUNK is of an iron-grey, mottled with irregular spots of gold, like the womens tambour-work in embroidery.

The *Scutcheon* is entirely raven-grey.

The *Points* on it are black.

The BODY is coal-black above, and raven-grey below.

The *Lines* dividing the rings are brownish.

The *Air-boles* are black.

The LEGS are of a fine bright yellow, with black claws.

The WINGS are brown, with a dusky edge.

The TAIL is amber-colour'd.

I received

I received this pretty creature by an accident from Scotland: the Duke of Athol found, this Autumn, in an oak-wood near Dunkeld, a Whortleberry-Shrub with white fruit: a thing not known before in Britain. His Grace did me the honour to send me some growing Plants of this small Shrub, for the garden of her Royal Highness the Princess Dowager of Wales at Kew; and upon one of them came several of these Flies wrap'd up alive.

It seems the *Tenthredo Sylvatica* of the *Systema Naturæ* of Linnaeus.

The Fly is Female, that is here describ'd; the Male has no Saw, for he has no use for it. Nature has given that instrument to the Female, to cut a way into a growing Vegetable; and there to lodge the eggs: which pass through the hollow made by the two sides or plates of the Saw.

The Male has in the same place, a kind of Forceps, or Pincers, which he can thrust out, and with them seize the Female. Thus in larger animals, where the Female has teats for suck, the Male has a resemblance of them for conformity.

When the Female lays her eggs, there goes with them an acid mucilaginous juice, which perverts the course of the Sap in the Plant, and makes it grow into a kind of gall: this operates as soon as it is issu'd, and cicatrizes the part the Saw had wounded.

One may see bubbles of this juice always left upon the Plant; it is soft and clammy: the wound is oblong, and crooked, and the part becomes black as if burnt: the egg increases in bigness to twice or more than that, after it is lodg'd in the Plant; nor is this strange since it has no hard covering.



Mottled Saw-fly

Tenthredo Variegata



G E N U S II.

T H E S A V A G E .

S P H E X .

Plate 3.

Character of the Genus.

The MOUTH is form'd of oblong Jaws, without Trunk, or Tongue.

The WINGS lie smooth, and perfectly even.

The ANTLERS have ten joints.

The WEAPON at the tail is simple, sharp, and hollow; and does not appear, except the Body be press'd; or the creature strikes with it.

Nothing can be so provident as this creature for its young; nor any thing so savage, as the means it uses for that purpose. The manner of living is different in the various Species; and so is the general form of the Body: the present and succeeding figure will shew this difference of shape: yet all the while the Genus is, and must be allowed the same, because the Characters in all the distinctive parts agree. And in the same manner, tho' the place of shelter, and the course of life, be utterly different; yet the same manners appear innate, and inherent in both.

They agree in being the fiercest of all Flys; they will attack Insects much larger than themselves; and this, whether they be defenceless, or arm'd, as they are, with a Sting. The Strength in all this savage kind is great; their Jaws are hard, and sharp; and in their Sting is a poison, suddenly fatal to the creatures with whom they engage. The Savage seizes hardily on the creature he attacks: and gives a stroke of an amazing force; and then falls off, as if himself were kill'd: but 'tis to rest from his fatigue, and to enjoy his victory. He keeps a steady eye on the creature he has struck, 'till it dies, which is in a few minutes; and then drags it to the nest, for the young. The number of other Insects these destroy, is scarce to be conceiv'd; the mouth of their cave is like a Giant's of old in romance; strew'd with the remains of prey: the Eyes, the Filament that serves as Brain, and a small part of the contents of the Body, are all the Savage eats: and he will kill fifty for a meal.

1. COMBFOOTED SAVAGE.
SPHEX PECTINIPES.

Plate 3.

Character of the Species.

The ANTLERS are form'd of oval Joints, and turn like rams-horns.

The FORE-FEET are form'd like combs, with three claws, and stiff hairs above.

The BODY is join'd close to the TRUNK.

Plate 3, a b.

This strong and fierce, tho' heavy Fly, lives in caverns of the earth, in the sides of hills and cliffs; and in holes made in the mud-walls of our little villages. I received this from the North of Ireland, where the mud-walls of one of the cabins on the side of a hill, was wrought into the appearance of a Honeycomb, by the multitudes of these creatures.

Its HEAD is of a chesnut brown.

The *Eyes* are blue.

The *Antlers* are brown; but the tip of each joint is ruddy.

The *Jaws* are amber-colour'd.

The *Feelers* pale brown.

The TRUNK is black, and rough.

The *Scutcheon* is grey.

The BODY is smooth, and shining; of a rusty iron colour, with bands of an orange yellow.

The *Air-holes* are brown.

The LEGS are of a blue grey; and the long hairs upon the fore ones, toward the feet, are yellowish.

The WINGS are of a pale brown.

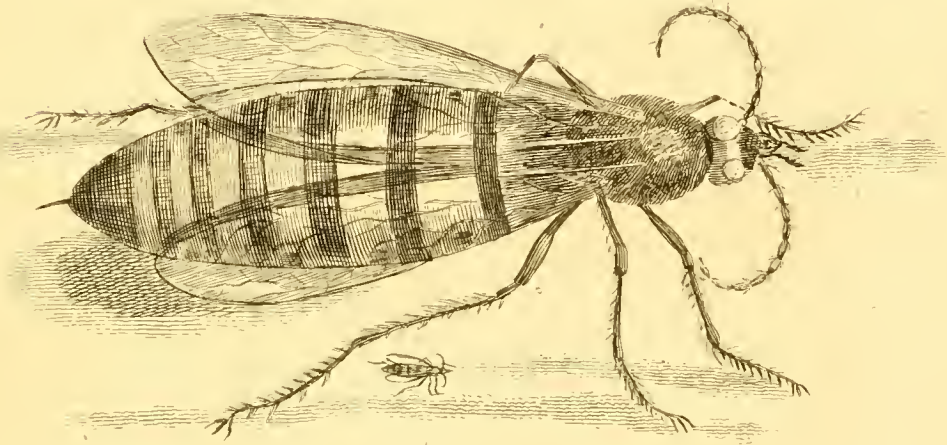
The STING, when the creature pleases to shew it, is of a fine polish'd brown.

This seems unquestionably the *Sphex Pectinipes* of the *Systema Naturæ*.

It is drawn here, as shewn by the fourth glass of the lucernal microscope; not magnify'd in any vast degree; but sufficiently to shew all its parts. Creatures much smaller require often larger figures to express their organs distinctly. All magnitude is comparative; and to be useful, the instrument should be employ'd with just so much power as is needful for distinctness.

2. THE

Sphex



Crest-footed Savage

Sphex Pectinipes

2. THE TURNER SAVAGE.

SPHEX SPIRIFEX.

Plate 4.

Character of the Species.

The BODY is join'd to the trunk by a long small thread.

The ANTLERS have ten joints; and they spread out, and grow small to the point.

The FEET are jointed, and equally hairy; and have each two toes.

This strange disjointed creature, as it seems, lives, by choice, among men, whom it never offends; but it is beyond measure terrible to the lesser insects: and by the fabricature of its dwelling, it might become an object of surprize and wonder; tho' there were nothing more to recommend it to our notice.

I received this particular Fly from Peterborough in Northamptonshire, where it had form'd its cells in the mud-wall of a small cottage, just under the edge of the thatch; dry, warm, and shelter'd from the weather.

The preceding kind lives in a mere cave of its own making; a simple, oval hole, with a small opening, and larger within: this had turn'd its dwelling in a close spiral form, and polish'd the inside so well, that it had the aspect of one of the spiral shells we see in cabinets, when saw'd open: about the mouth of this, was form'd a kind of funnel, covered with legs and wings of slaughter'd Insects; and just within this mouth usually sat the inhabitant watching what came by; for the strange structure of his body made him less fond of flying far; lest half of it should be left behind him.

Beside the astonishing havock of this creature among the Insects, on which it preys, there is a part of its history strangely replete with horror: it has been observed, that while the Savages are so destructive of other creatures, they have a wonderful attention to their young; and this, by a course of Providence unknown to us, any more than by the term instinct, appears in all their actions, even before those young are born.

In the preceding kind, the eggs are laid in the back part of the cavern where the creature lives; evenly arrang'd; and when the time of their hatching is near, the Fly brings in a number of slaughter'd Insects, for the food of the expected young ones: she then closes up the mouth of the hole with mud, and her care is over. When the young worms hatch, they find their food ready; and when they have eaten their fill, they rest, and take their change into the Fly.

But this creature lays her eggs in the body of a living Caterpillar: they hatch, and eat that creature up, even while itself is feeding: at their appointed time they hatch: and 'twas long a wonder among the curious, how a Caterpillar produced this Fly, instead of a Butterfly, or Moth; or how one Insect chang'd to many.

The HEAD of this creature is of a chefnut brown, with a shade of blue.

The *Eyes* are black, and large.

The *Antlers* are of a ruddy brown.

The *Feelers* are blackish.

The *Jaws* are hard, ferrated, and yellow.

The TRUNK is of a ruddy brown.

The *Scutcheon* is yellow.

The *Thread* which fastens the two parts together, is also yellow.

The BODY is of the colour of rusty iron; but there is a skin of yellow covering part of it from the end of the thread.

The *Air-holes* are black.

The LEGS are partly brown, and partly yellow.

The WINGS are of a dusky brown.

The STING is yellow.

The drawing of this, as of the former, is not greatly magnify'd; the same fourth glass was us'd to it; the creature being naturally of a size nearly big enough to shew its own particularities; and always here the less magnifying is wanted, the less is us'd.

G E N U S



Sphex Spirogaster

The Turner Savage

G E N U S III.
A N T - E A T E R.
M Y R M E L E O N.

Character of the Genus.

The MOUTH is form'd of Jaws, with two long Tusks.

The ANTLERS are club fashion'd; and there are four long Feelers.

The WINGS hang down.

The TAIL is arm'd with a pair of Knippers, in the Male.

I. T H E G R E Y A N T - E A T E R.
M Y R M E L E O F O R M I C A R U M.

Plate 5.

In many of the wing'd Insects, their prior form of the Worm, or Reptile, rising immediately from the egg, demands a share of our attention, with the Insect in its more perfect and more beautiful appearance; in the present kind, our greatest admiration is demanded in that less perfect state. The Butterflies arise from Caterpillars; the Beetles from six-footed Worms; and the Dragon-flies from Insects without Wings, which swim about in water. The creature under consideration here, approaches to the Dragon Fly in kind; and in its figure, in the Reptile State; being a broad and bloated hexapode; but inhabiting the dryest earth.

It is known that birds and beasts of prey can endure great and long-continued hunger; the fiercest most. This creature, ally'd to the Savages in its manners, can also bear their abstinence: La Hire, of the Paris Academy, observ'd about fourscore years ago, that the creature could bear a seven months fast; 'twas to him we owe the first notice of this Insect; so well described soon after by Vallisnieri, and Poupert; and so much spoken of, and so poorly understood, by the petty retailers of natural knowledge since.

The Reptile State of this pretty Fly, known by the name Formicaleo, is a coarse Insect, of a pale yellow, streak'd with brown, and varied with some black tufts of hairs; but usually it is so covered with dirt, that it looks brown: its habitation is under ground; it forms a pit, like a funnel, of dry dust, and lies conceal'd in the centre of it, to catch the Ants, or other little creatures, that fall into it.

Its Head is broad, and flat, and has a pair of Tusks, or Horns; or, by whatever name we may call parts unknown to larger animals; these
are

are sharp, open, and hollow : with these he pierces the bodies of Insects ; with these he draws in their juices for his food ; and when that is done, they have an elastic force, by which they throw the carcase far away. He retires under ground to feed, and just rises to throw the refuse out of his pit ; then repairs its injuries, and waits for the next chance. These pits are about three inches wide ; the creature leaves them, and makes new ones at his pleasure : and in this state he always lives many months, sometimes two years, before he turns into the Fly, now to be describ'd.

M Y R M E L E O F O R M I C A R U M.

THE ANT-EATER FLY.

Plate 5.

The ANTLERS are compos'd of twenty-four joints, and grow larger to the tip.

This is a large Fly, not swift in its motions, but fierce and destructive ; even in a degree equal to that of the Reptile, from which it springs : it plays about the bushes in the meadows of France and Italy, in the latter part of summer, and will seize on almost any thing it can catch.

Its HEAD is of a chestnut brown.

The *Eyes* are vast, and green.

The *Antlers* are of a deep brown.

The *Feelers* are long, and dusky ; there are four of them.

The *Jaws* are yellow, hard, and sharp ; and the two *Tusks* are brown.

Its TRUNK is of a greyish brown, with a gilded variegation.

The *Scutcheon* is blueish.

Its BODY is of a pearly grey, deep, and not elegant.

The *Lines* or *Rings* are black.

The *Air-holes* are edg'd round with brown.

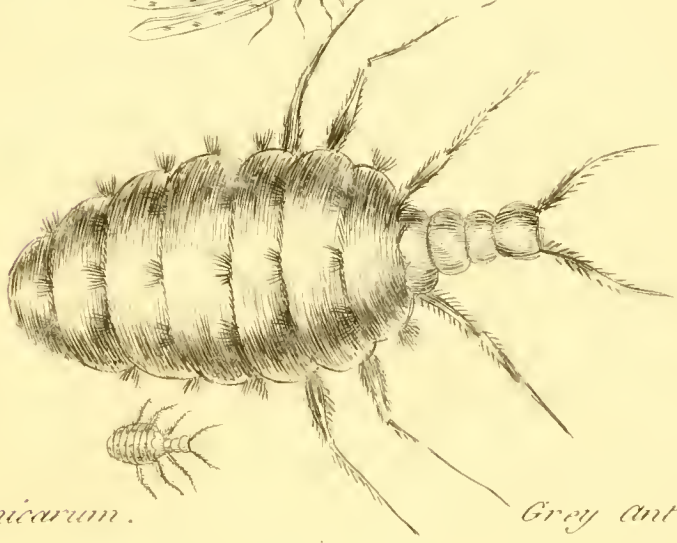
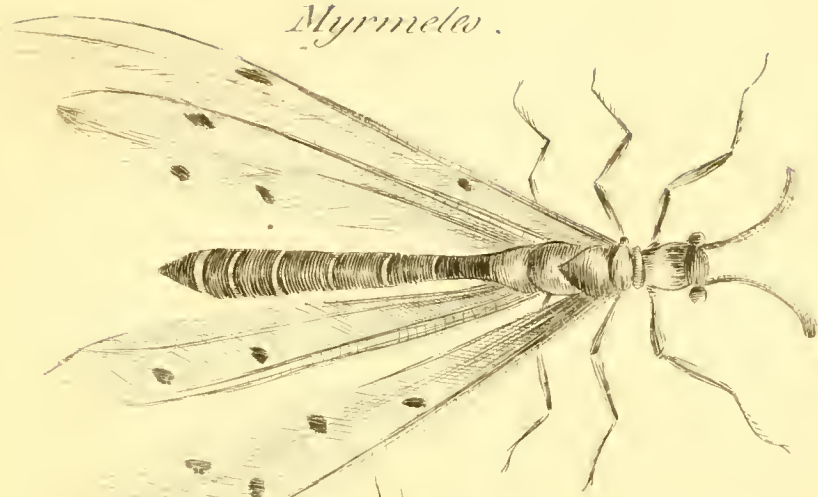
Its LEGS are short, strong, and ruddy, with long dark hairs.

Its WINGS are grey ; and in the particular Fly before me, there are four spots of a dusky brown upon each of the upper ones, and two on each of the under : I say, in this particular Fly, which is from Italy ; for there are more, or fewer, or none, in those from other places.

The Knippers at the Tail are horny, and chestnut colour'd.

This is the Fly of the famous Formicaleo, the Myrmelea Formicarum of the latest writers.

G E N U S



Myrmelao Formicarium.

Grey Ant Eater.

G E N U S IV.

G A L L F L Y.

C Y N I P S.

Plate 6.

Character of the Genus.

The MOUTH is form'd of oblong Jaws, and has no Trunk.

The WEAPON at the Tail is spiral: it is naturally hid; and only Females have it.

They have an ink in Norway, rude, and unciviliz'd, as the country in a great measure is, which excels that of all the world in colour, clearness, and permanency. Some letters, I had the honour to receive from the Bishop of Bergen, gave me an opportunity of observing this; and an enquiry into its composition, produced an History of the succeeding Fly; frequent in France and Germany, as well as there; and I think not unknown in England: but 'tis with caution we must ascertain the Species of these lesser animals. Colour has been taken in as an essential character, but it changes here.

Our oaks give food and lodging to a multitude of Insects: I think there are not less than forty-seven creatures of this rank, perfectly distinct in species, and of many Genera, that live in, and on it.

We see upon the oak-leaves in our woods in June, round balls, as big as nutmegs, green, with a blush of red, and soft to the touch: these are the leaf galls with which the Norway ink is made; and we have nearly the same Fly that makes them. They arise from a wound made by that Insect, who lays an egg there; and in their centre there is a small cavity, within which the Worm lives, that, after a time, hatches into this Fly.

The common galls, with which the common ink is made, and which are also of so great use in dying, rise from the young shoots of the oak, not from its leaves; and they are hard and woody. These are more numerous; and as they fall with the leaves in Autumn, they might be collected easily in great quantity; and may perhaps be of value, by improving more than one article in Commerce.

II. THE OAK LEAF GALL FLY.

CYNIPS QUERCUS FOLII.

The ANTLERS are hoop'd, and have a thick extremity.

The TRUNK is bloated, and streak'd.

This Insect I received from Norway, where the oaks were in a manner covered with it, in the months of July, and part of August, 1768; and in our own oak-woods I have seen such a Fly frequently; and found it, tho' differing a little in colour, perfectly the same in all its characters. It is a strong, coarse-made, and not very handsome Fly; and is slow and heavy in its motions: and is generally found sitting on the under part of a leaf, with its wings spread out flat.

Its HEAD is of a ruffet brown.

The *Eyes* are blue.

The *Antlers* are mottled, of black and chesnut colour.

The *Feelers* are brown.

The *Jaws* are sharp, jagg'd, and brown.

Its TRUNK is of a raven grey, very beautifully streaked with white.

Its BODY is coal black.

The *Rings* dividing the Joints are brown.

The *Air-holes* are dusky.

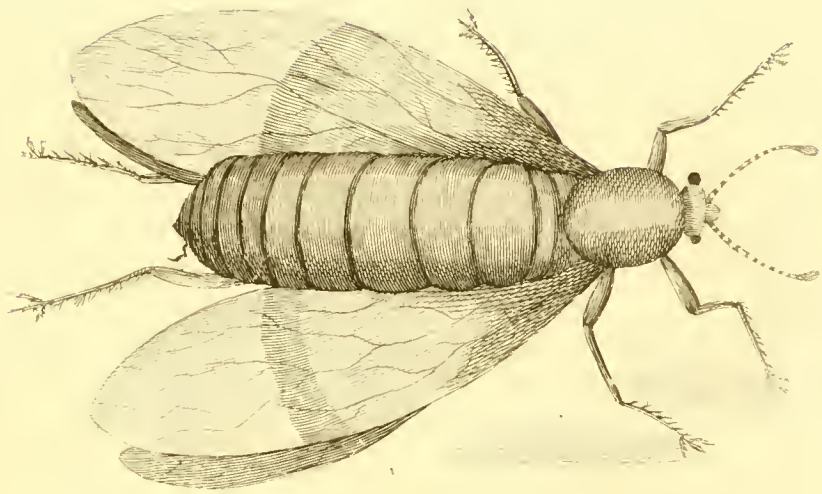
Its LEGS are grey, with stiff black hairs, and black toes; and the thigh is black.

Its WINGS are of a pale brown, with a tinge of olive-colour; the Veins on them are deep grey.

Its TAIL is perfectly black.

The *Sting* is chesnut brown.

With us the Trunk and Body of this Fly are quite black; otherwise there is no difference between some I caught this year in Bushy Park; and those I had from Norway.



Cynips Quercus folii.

Oak leaf Gall Fly.

G E N U S V.

D A Y - F L Y.

P H R Y G A N E A.

Plate 7.

The MOUTH is oblong, and without Teeth.

There are no *Feelers*.

There are two large *Studs* upon the Head, just above the eyes.

The WINGS are carry'd standing upwards, and are unequal in size.

The TAIL has bristles annex'd to it.

The Day-Flies are an inoffensive race ; born to pass thro' their little stage of being, the prey to a thousand enemies ; but hurtful to no creature : they live about waters, in which they breed ; and in their Fly state have so short a term, that it has been the subject of separate histories, by Naturalists, and Emblems for moral writers. The name, Day-Fly, arises from their living in that state but one day : but in many of the species, even that period is much longer than is allowed.

The particular kind first to be figured and described in this place, never bursts from its Reptile state, till about six o'clock in a summer evening ; and never lives to see the next sun rise.

Five hours complete its little span of life ; in the which time, if it escape the Fish, the Dragon-Flies, and Reed Sparrows, (for all are after it) it copulates with the Male ; deposits its impregnated eggs in the waters ; and dies before the cold of midnight.

But 'tis not that these hours are all it lives ; 'tis in these only it enjoys the air : but the Worm hatched from the egg of this Fly lives, and feeds heartily in the waters, enjoying a much longer date, and that in more security ; for it covers its tender frame with a motley case of its own constructing ; and gormandizes unsuspected, and unseen ; for one, or sometimes nearly for two years.

3. THE WHITE-WING DAY-FLY.
EPHEMERA CULICIFORMIS.

Plate 7.

The ANTLERS have a multitude of knotted joints, and grow smaller to the point.

The BRISTLES of the Tail are hard, and firm.

This is a swift-wing'd Fly, abundant about running waters, in the months of June and July; where it becomes the food of a multitude of fishes: many leap at it as it drops toward the water; and others watch the reeds and rushes near the shore, and take it with more ease as it is dropping its eggs. This was caught in July last, near Esler.

Its HEAD is of a dusky brown.

The *Eyes* are green.

The *Studs* are jet black, and shine.

The *Antlers* are of a chesnut brown.

The *Mouth* is a kind of amber-colour'd beak.

Its TRUNK is of a tawny brown, with a brighter spot in the middle.

The *Scutcheon* is nearly white.

Its BODY is of a dead brown.

The *Rings* are pale.

Its LEGS are of a greyish, or ash colour.

The WINGS, tho' not decorated as the Moths, or Butterflies; yet have a peculiar and wonderful prettiness: they are of a pearly white, mottled here and there, and clouded as it were with the same colour, only thicker, or less pure.

The TAIL is pale brown.

The *Bristles* are ruddy.



Ephemera Culiciformis.

White Wing'd
Day Fly!

2. ROCK DAY-FLY.

EPHEMERA RUPESTRIS.

Plate 8.

The ANTLERS have a multitude of close-connected joints, and grow all the way smaller to a point.

The BRISTLES at the Tail are short, and weak.

Nothing can be stranger than the history of this Fly, which came to my knowledge by an accident last year; and, I believe, has not been observed by any writer.

On a stone obelisk, erected before a house in London, to support the lamp, I observed several oblong, greyish tubes, or cases, running in various directions; some strait, and others a little bent. I should have supposed them the tubuli, or cases of Sea Worms, petrify'd, as is frequent in many kinds of stone; but that these obelisks carried very plainly the marks of the chissel; and the little tubules I observed were wrought over them; and therefore evidently had been formed after the stone was work'd.

The singularity of this, caused me to direct a servant to pick off some of them; which he attempted in vain: he found them as hard as the rest of the stone, and fixed to it with great firmness: with the help of a hammer, some few were at length got off; and I found nothing shelly in them; but that they were mere stony tubes, form'd of the matter of the obelisk, in small granules, cemented close.

In breaking several others, I at length found in some, the creature which had form'd them for its house and shelter: this was a little yellowish Worm, with a black head, and a number of small, short feet. It usually resided in the bottom of the tubule; but came out at pleasure.

On some cobwebs, about the upper part of the obelisk, I found, among other Insects, the remains of two or three Flies, seeming either of the Day-Fly, or Moth kind; but too imperfect for me to ascertain the Species.

Thus rested the matter for that time; but my curiosity being roused by the strangeness of the incident, I examined large masses of stone, wherever I saw them, this last year; and happening to be in Buckinghamshire in July, I found the whole mystery explained.

Several large stones that stood in water at their bottom, tho' dry enough above, were covered with grey, stony tubules of this kind; and about one of these masses, on the evening of the 18th of July, I found more than fifty, of the Fly, to the Worm of which they owed their origin. 'Tis a very pretty creature, and in all respects of the Day-Fly kind.

Its HEAD is hoary, and of a strong fine green, with a black round spot on its centre, shining at the summit.

The *Eyes* are black as jet.

The *Studs* are brown.

The *Antlers* are scarlet, long, thrust strait forward, and usually cross'd.

The *Mouth* is dusky.

Its TRUNK is of a lovely green, and is join'd to the body by a kind of neck, which is also of a velvety green.

The *Back* is beautifully variegated with streaks and dots of gold.

The *Scutcheon* is of a lighter green.

Its BODY is thick, and green, and is connected to the Trunk almost without a division.

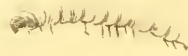
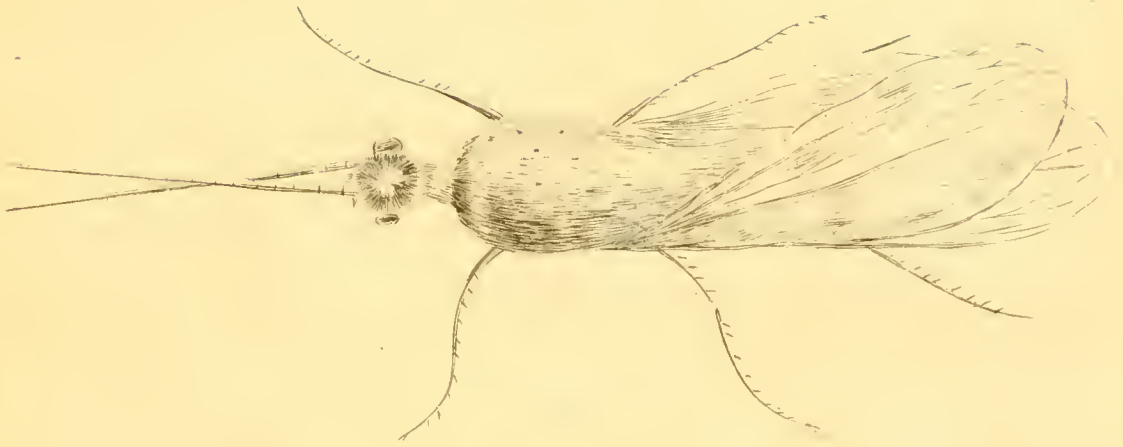
Its LEGS are of a pale brown.

Its WINGS of the same pearly grey with the preceding; but elegantly vein'd, and clouded with a pale blue, and a light brown.

The BRISTLES are amber-colour.

I believe this Fly lives no longer than one evening in its wing'd state: the Females, among those I saw, were very busily depositing eggs in all the cracks and crevices of the stones. The Worms hatched from these, make the stone tubules for themselves, and probably live in them one or two years.

Ephemeria
2



Ephemeria Rupestris

Rock Day Fly



I N S E C T S.

C L A S S II.

Those which have four feathery wings.

BY feathery wings, we understand such as are form'd, in appearance, as of the feathers of birds : each wing consisting of only one such feather ; tho' sometimes split, or divided.

G E N U S I.

C H I N C H.

A L L U C I T A.

Plate 9.

The **ANTLERS** are compos'd of a few oval joints ; and the extreme one runs out into a point.

The **TAIL** is split, and hairy.

The **FEATHERS**, which are plac'd as wings, consist of jointed ribs, and thin flat plates set regularly on them.

The Chinches are a race of Insects so extremely small, that they have in a great measure escaped observation. Few of those who have studied these small objects, have seen any of them ; and from such as have, very little of their nature is to be learn'd, for they have only casually come before the eye : and those microscopes, by the assistance of which they have been examined, and figured here, have not been known till lately.

The creatures in the Insect world, to which the Chinches approach the nearest, are the feather-wing Moths ; but from these they differ abundantly in the structure of their Antlers, and the shape of their body, their motions, and peculiar formation of their Tails. Those Moths have been called *Phalenæ Alucitæ* ; and the latter term therefore alone seems the most familiar and intelligible name for these.

The feathers which compose, or rather which are the wings of the Chinches, tho' they very much resemble the plumes of birds in appearance, are in reality very different, and have nothing truly feathery in them. They are compos'd of a hollow jointed rib, not unlike some of the *Corallines* ; and the hairs, or plumes, as they seem, which rise from them, are flat, thin, conic scales.

1. THE STRAW-COLOUR'D CHINCH.

ALLUCITA PALLIDA.

Thrips urticae Fabr.?
Each wing is composed of one distinct undivided feather.

Plate 9.

This is a creature very strange in its nature, and history; and which once came as strangely before me. A studious gentleman, very subject to the head-ach, which he, and his physician, both attributed to great attention; sneezing one day with violence, as he was writing, saw some atoms a moment afterwards upon a sheet of white paper that lay upon his table; and they plainly moved: he doubled up the paper, and brought it to me: when we laid a parcel of these moving particles before the lucernal microscope, they appeared of the size and figure represented at Plate 9; and were in continual motion; vibrating their Antlers, shaking their Wings, and turning up their Tail to their Heads, in the manner of Earwigs, but with an incredible swiftness.

'Twas palpable they had been discharged from his nose; and 'tis very easy to see whence they were thrown, and to understand how they might have caused intolerable pain, while they were thus raising and moving their irritating hairs, and feathers, upon a part where the very substance of the brain is almost naked.

I had seen the same Species inhabiting the Flowers of the Plant Mignonette; and on asking, found he had that Plant in his chamber.

The HEAD of this creature is lemon-colour'd.

Its Eyes are of a delicate blue.

The Studs over them deep black.

Its Antlers are of the palest brown, but ruddy at the base of each Joint.

The Feelers are pale, and small.

Its TRUNK is of a pale straw-colour.

The Scutcheon has a tint of greenish.

Its BODY is very pale straw-colour.

The Rings dividing it are whitish.

Its LEGS are pale brown, but deeper at the joints.

Its WINGS are whitish, with a dusk of brown.

Its TAIL is amber-colour'd.



Allucita Pallida

*The Strawcolour'd
Chinch*

2. THE TAWNY CHINCH.

ALLUCITA FULVA.

Thrips cornubi ferarum Halid.?
Plate 10.

Each wing is composed of two feathers, rising from a simple base.

This little creature lives in the hollows of the Flowers of Plants, as the preceding; and seems calculated to do at least as much mischief, being fully as small; more covered with Hairs, or short Bristles; and to all appearance, both as to its structure, and motions, able to drive them into the tender membranes with more force: a bigger bodied, and more robust creature.

It is a wanderer, and lives in a manner at large in gardens: 'tis fondest of the sweetest Flowers: the Damask-Rose is often full of them, and the stock July-Flower, and Wall-Flower; nor does it disdain the Lupine, and the Pea.

The characters, and structure of the Chinches, are in no Species seen more distinctly than in this.

Its HEAD is of a dull yellowish brown.

The *Eyes* are large, and of a fiery red.

The *Antlers* are firm, elegantly jointed, a little hairy, and very sharp at the points; and they are of a pale brown.

The *Feelers* are short, and dusky.

Its TRUNK is brown, covered with pale hairs, and variegated with a dead yellow.

The *Corcelet* is paler.

Its BODY is of a tawny brown, divided by dusky rings, and covered thick with short, firm, whitish hairs, which it can raise at pleasure.

Its LEGS are of a dusky brown, strong jointed, and have forked, hard, horny toes, and some very stiff hairs upon them.

It

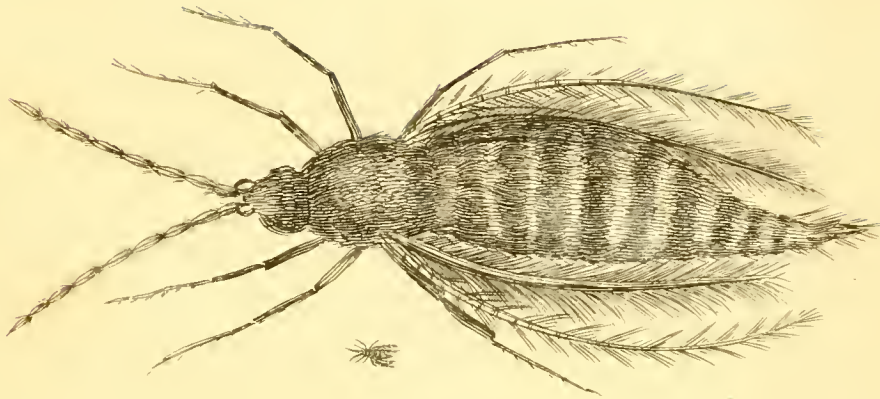
Its WINGS are of a pale dusky yellow ; the rib of them is seen beautifully jointed ; and is palpably hollow.

The Scales, which make what are call'd their hairs, or feathery substance, are very numerous, narrow, and sharp, both at the edges, and the point ; and they make a great appearance, because, each being compos'd of two feathers, the creature seems, in comparison with the preceding, to have four wings upon each side.

The creature has, when living, all the motions of the preceding kind, but stronger ; as its Body seems more muscular : and the power it has of raising its Bristles, as the Porcupine, must add greatly to the irritation, when it is got into a tender part.

Whether, and how far, head-achs are to be traced from these little creatures, is a subject yet for more enquiry ; but 'tis worth the pains. Many have this pain from the smell of Flowers. Some have been found dead, with quantities of violets, and other Flowers, in their chamber. Physicians have attributed these deaths to the powerful odour of those Flowers ; but that they should be owing to these creatures, is much more probable.

Whether they do, or do not, ever fly far from the Plants they inhabit, I have not yet found ; but in the stillness of the night, it would not be strange if they should : and that they hover round them I have seen : for placing a strong light, and a great convex glass, near a pot with a growing Lupine, in a dark chamber, I have discovered the air, all about the tops of the Plant, in a manner filled with them, moving like motes in a sun-beam.



Allucita fulva.

The Tawny Chinch.

I N D E X.

A.

A	Lder Fly	—	6
	Allucita	— —	21
	Allucita Pallida	—	22
	Allucita Fulva	—	23
	Ant-Eater	— —	13

C.

	Chinch	— —	21
	Straw-colour'd Chinch	—	22
	Tawny Chinch	—	23
	Cynips	— —	15
	Cynips Quercus Folii	—	16

D.

	Day-Fly	— —	17
	White-wing'd Day-Fly	—	18
	Rock Day-Fly	—	19

E.

	Ephemera	— —	17
	Ephemera Culiciformis	—	18
	Ephemera Rupestris	—	19

F.

	Feather-wing'd Insects	—	21
	Fiercest of Flies	—	9

G.

	Gall-Fly	— —	15
	Gauze-wing'd Flies	—	3

M.

	Mottled Saw-Fly	—	7
	Mourning		

I N D E X.

Mourning Saw-Fly	—	5	Comb-footed Savage	—	10
Myrmeleo	—	13	Turner Savage	—	11
Myrmeleo Formicarum	—	13	Saw-Fly	—	4, 5
			Sphex	—	9
O.			Sphex Pectinipes	—	10
Oak-leaf Gall-Fly	—	16	Sphex Spirifex	—	11
			Stone-Fly	—	19
P.			T.		
Phryganea	—	17	Tenthredo	—	4
			Tenthredo Luctuosa	—	5
S.			Tenthredo Variegata	—	7
Savage	—	9	Tenthredo Alni	—	6

E N D

