



The DAY
BUTTERFLIES

AND

DUSK FLYERS

of

NEW ENGLAND

by E. KNOBEL

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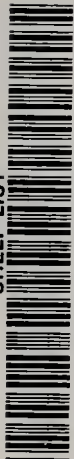
THE
DAY BUTTERFLIES
AND
DUSKFLYERS OF NEW ENGLAND

HOW TO FIND AND KNOW THEM.

BY EDWARD KNOBEL.

BOSTON: PUBLISHED BY BRADLEE WHIDDEN.

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LEPIDOPTERA.

BUTTERFLIES AND MOTHS.—Insects without jaws, having the maxillæ prolonged into a spiral sucking tube, the wings broad and covered with dust-like scales. The transformations are complete. The larvæ are provided with six true legs, and from one pair to five of false or pro-legs. The pupa is generally inclosed in a cocoon (except butterflies), and has the legs and wings soldered to the breast.

This order has been divided into three groups, called day, dusk, and night lepidoptera, or butterflies, sphinges, and moths. Butterflies are distinguished from moths by having the antennæ knobbed or thickened at the end; while the antennæ of hawk-moths are thickened in the middle, those of moths are either simple or feathered. As these are the most delicate of all insects they should be carefully handled, to avoid injuring the specimen by rubbing the dust or scales from the wings. They are most easily captured with a gauze net, after which they may be killed with benzine or ether, or by slightly pinching the thorax, taking care to have the wings folded together over the back, then pinned and placed in the collecting box.

As entomology does not consist in simply knowing an insect in the perfect state, or being able to give its scientific name, a knowledge of its habits and transformations is necessary. To obtain this the student should collect and rear caterpillars, watching them through their different changes, and closely observing every particular connected with their metamorphoses.

Feeding boxes may be of any size, though boxes a foot square are the most convenient. They should have good ventilation, and the atmosphere kept moist by a few inches of damp sand and earth in the bottom. For species

that do not transform in the ground, light cages of gauze may be used, placing the food, which must be renewed at least once a day, in water. The worms should never be exposed to the sun. Caterpillars of small moths may be kept in wide-mouthed bottles, or even in common tumblers covered with gauze, having sand enough in the bottom to enable them to complete their transformations. For leaf miners, where it is essential to preserve the leaf till the insect has gone through with its transformations, "a glass jar, tumbler, or jam-pot" (as Packard recommends), "the top of which has been ground to receive an air-tight glass cover, the bottom of which has been covered with moist white sand, will keep a leaf fresh for a week. Thus a larva in the summer will have to be fed but two or three times before it changes; and the moth can be seen through the glass without taking off the cover." As the pupæ easily dry up, they should be kept moist. The pupæ of fall caterpillars do not change to the perfect insect till the following spring or summer, and during the time should be covered with damp moss and kept in a cool place.

The observer should note down the states of the different transformations in a book kept for the purpose, accompanied with full and accurate descriptions, and drawings when practicable. The food plant should be particularly given. When an insect is reared from the egg the state of hatching should be noted, the length of time required for the worm to become full fed, and the period it remains in the pupa state, as well as the state of appearance of the imago.

The swallow-tails, belonging to the family *Papilionide*, are among our largest and most common butterflies, and are found during summer quite common in fields and meadows. *Papilio asterias* is a black butterfly with yellow spots along the margin of the wings; its larvæ are green and black, and feed upon parsnips, celery, etc. The white and sulphur butterflies in the larval state feed upon grasses, and are green, hairy caterpillars. The different species of *Argynnis* have the under side of the wings sprinkled with spots of silver. *Satyrus* has broad wings of a delicate brown, with eye-like spots near the hinder margin; it abounds in open woods. The azure butterflies, and the class

which are coppery-brown species, having a slight tail to the hinder wings, are the smallest of butterflies. The different species may be collected from May to October. The family of skippers, *Hesperians*, are rather small, thick-bodied butterflies, having the antennæ hooked at the end like a shepherd's crook. The colors are brown and yellow. The caterpillars, which are green, have large heads.

Hawk-moths, *Sphingidæ*, fly only at dusk, frequenting flowers, into which they insert their long sucking tubes or maxillæ. They are very stout bodied, and have thick narrow wings, making them rapid in flight and hard to capture. The larvæ are large, green, fleshy caterpillars, having a terminal horn-like appendage. The humming-bird moths are smaller, and have transparent wings. They fly in the sunshine, darting into flowers, or suspending themselves above them like humming-birds. *Egeriadæ*, small, clear-winged insects, with steel-blue bodies, in the larval state are borers. *Æ. polistiformis* bores into the root of the grape. The *Bombycidæ*, or spinners, including the silk-producing moths, are known by their large bodies, small sunken heads, and broad wings. The common white miller belongs to this group; its larva is thick and hairy, and is found very common in gardens. Several of the largest species, true silk-producing moths, of which *Samia cecropia* is an example, measure six inches from tip to tip when the wings are spread. The larvæ are green caterpillars, with scattering tufts of short hairs. Among the owlet moths, or *Noctuidæ*, the wings are small and narrow. As the insects are attracted to the light, night is the best time to take them. "The larvæ are tapering, and are striped and barred in different ways. The noxious *cut-worms* are the larvæ of the *Agrotis* moths, some of which may be found in fields in autumn upon flowers; while others fly only at night, and lie concealed during the day time in chinks of stone walls and like places. The *Catocalas* have rather broader wings, the hinder ones being beautifully striped with bands of red, yellow, or black. The *Geometridæ* are easily distinguished by their slender bodies and feathered antennæ. The larvæ are known as span worms, measuring worms, etc. Many of the species have angulated wings, generally of some shade of yellow, crossed with faint lines of darker

shade. They may be taken in the woods in June and July. Delta moths, or *Pyralidæ*, so called from the habit of placing the wings in the form of a triangle when at rest, are slender-bodied, having the antennæ always simple. They are found also in woods, resting upon the under side of leaves. The leaf-rollers, *Tortricidæ*, are found very abundant in summer, upon leaves of trees, low bushes, and herbage. The larvæ live in rolled-up leaves. The *Tineidæ*, though the smallest moths of the order, are very destructive to vegetation. The wings are narrow and edged with delicate fringe. The clothes-moth and corn-moth are representatives of the family. They are found in a variety of situations; many fly in the grass, always alighting head downward. These, with *Alucitæ*, a small family with wings, divided into numerous branches, close the order.

The above is reprinted with some few changes from United States Agricultural Report for 1868.

The colors of the butterflies are indicated in the drawings: upright lines, red; horizontal lines, blue; and dotted spaces yellow.

THE DAY BUTTERFLIES
AND
DUSKFLYERS
OF NEW ENGLAND.



THE BUTTERFLIES, *Lepidoptera*, are divided into three groups:—

DAY-BUTTERFLIES:—which have a knob on the end of their feelers (antennæ), and shut their wings upperside inwards.

Those which open and shut their fore and hindwings together are the true Butterflies *Papilionidæ.*

Those which open lower wings and leave upper wings half shut are Skippers *Hesperidæ.*

DUSK-BUTTERFLIES:—(though some fly in day time) which have their feelers (antennæ) thickest in the middle, tapering towards each end, and which shut their wings rooflike over their bodies, upperside outward.

Those with stout bodies and narrow wings are Hawk or Hummingbird Moths *Sphingidæ.*

Those with small bodies :
 wings transparent, are Stemborers, Beemoths *Egeriadæ.*
 wings not transparent *Zygenidæ.*

NIGHT-BUTTERFLIES:—which have their feelers (antennæ) thickest at the base, tapering to the point, often featherlike, and shut their wings rooflike, upper side outwards : Moths.

Day-Butterflies. *Papilionidæ*



With large swallow-tails	No. I., pages 10, 11.
Fore and hindwing angled and scalloped	No. II., pages 12, 13, 14.
Forewing angled, hindwing rounded	No. III., pages 14, 15.
All wings rounded :	
tawny, foxy red, black band around forewing	No. IV., page 16.
pearl white spots on under side	No. II., page 18.
black spotted	No. V., page 18.
two little tails, under side greenish	No. IX., page 24.
black	No. IV., page 16, No. V., page 18.
white or light yellow	No. VI., page 20.
dusky dark brown, large	No. VII., pages 21, 22.
dark brown, small	No. IX., pages 24, 25, No. VIII., page 23.
blue	No. VIII., page 23.
red copper color	No. VIII., page 23.

Skippers. *Hesperidæ*.

Dark, dusky brown	No. X., pages 26, 27.
Tawny and brown	No. X., page 28.

I. Swallow-Tails.



1. YELLOW TIGER SWALLOW-TAIL. *Papilio turnus* (*Jasoniades glaucus*). 5 in. Cream-yellow, black border and stripes. Caterpillar pea-green with blue dots and black eye-spots, legs pink; feeds on wild cherry, hop, apple, birch, ash, and hawthorn.



2. BLACK GREEN-CLOUDED SWALLOW-TAIL. *Papilio troilus* (*Euphocades troilus*). 4 in. Black, border one row of spots, lower half of hindwing blue with one orange spot, not black eyed. Caterpillar pea-green with blue dots, pink head and legs; feeds on sassafras.



3. BLACK SWALLOW-TAIL. *Papilio asterias* (*Princeps polyxenes*). 4 in. Black, border two rows of spots, blue between rows on hindwing, and one black-eyed orange spot. Caterpillar green with black cross stripes; feeds on carrots and parsley.



Papilio chresphontes. Black, yellow band across forewing and border; under side yellow.

Papilio philenor (*Lærtias philenor*). Black, one row of spots in border, hindwing blue, no orange spot on upper side.

The last two are Southern kinds, rarely seen in New England.



II. Angle=Wings.



1. MOURNING-CLOAK. *Vanessa (Papilio) antiopa*. $3\frac{1}{2}$ in. Dark purplish brown, border light yellow with a row of black-bordered blue spots. Caterpillar spiny, black, with eight brick-red spots on back; feeds on willow, poplar, and elm.



2. WHITE J BUTTERFLY. *Grapta J Album*. 3 in. Pale tawny red, pale border, several large black and one white spot near tip of forewing, and two on forward side of hindwing; under side blackish gray, with small silver J on hindwing.





3. SEMICOLON BUTTERFLY. *Grapta (Polygonia) interrogatione*. 2½ in. Fox red, one large and six smaller black spots on forewing, under side reddish brown with silver semicolon. Caterpillar feeds on elm, hop, and nettles.



4. PROGNE. *Grapta (Polygonia) progne*. 2 in. Fox red, one large and five smaller black spots on forewing and two or three on hindwing, border dark, under side blackish gray with silver L on hindwing. Caterpillar feeds on elm, gooseberry, and currant.



5. GREEN COMMA BUTTERFLY. *Grapta (Polygonia) comma*. 2 in. Like Progne, but with two more black spots in middle of hindwing, border edge light gray, under side brown with silver comma on hindwing. Caterpillar feeds on willow and black birch.



Grapta faunus. Has larger black spots and is a darker variety, under side gray and black.

MOUNTAIN GRAPTA. *Grapta gracilis*. Is smaller and paler than *G. comma*.



6. TORTOISE SHELL. *Vanessa (Aglais) milberti*. Black, with broad orange band on both wings, two white and two orange spots on forewing. Caterpillar feeds on nettles.



III. Admirals.

1. ADMIRAL. *Pyrameis (Cynthia, Vanessa) atalanta*. 3 in. Black, white spots and red band across forewing, black spots in broad red border on hindwing. Caterpillar dark brown with white spines; feeds on nettles and hop.





2. THISTLE CYNTHIA. *Pyrameis (Vanessa) cardui*. $2\frac{1}{2}$ in. Tawny red, spotted with black and white on forewing, hindwing black, spotted border, and two red bands with five round black spots; under side has five eye-spots. Caterpillar feeds on thistles.



3. HUNTER'S CYNTHIA. *Pyrameis (Vanessa) hunteri*. $2\frac{1}{2}$ in. Like *P. cardui*; dots on hindwing blot together, two eye-spots on upper and under side. Caterpillar feeds on hollyhock, sunflower, and thistle.



LAVINIA. *Junonia lavinia*. One eye-spot on both sides of forewing, and two eye-spots on upper side of hindwing.

IV. Nymphs.

1. MONARCH. *Danais archippus* (*Plexippus*). 4 in. Tawny orange, with white spotted black border and black veins, under side of hindwing cream yellow. Caterpillar black, white and yellow striped; lives on milkweed.

2. VICEROY. *Nymphalis* (*Limenitis*) *disippus* (*Basilarchia archippus*). Like *Danais archippus*, black band across hindwing, under side tawny orange. Caterpillar pale brown, white on sides; lives on willow, poplar, apple, plum, and oak.





3. EPHESTION. *Limenitis ursula* (*Basilarchia astyanax*). $3\frac{1}{2}$ in. Black and blue, three black stripes in border. Caterpillar lives on oak, cherry, and blueberry.



4. ARTEMIS. *Limenitis* (*Basilarchia*) *artemis*. Like Ephestion, but has band of red spots on hindwing and broad white band across both wings. Caterpillar feeds on linden, black birch, poplar, hawthorn, and willow.



V. Mother-of-Pearls.

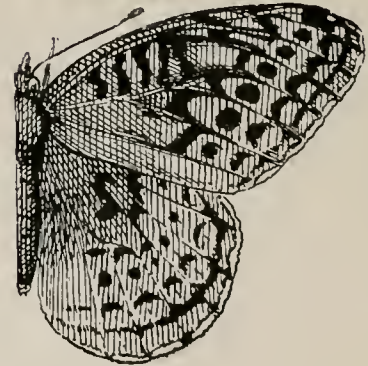
With pearl white spots on under side of hindwing.

1. REGAL MOTHER-OF-PEARL. *Argynnis (Speyeria) idalia*. $3\frac{1}{2}$ in. Tawny orange, lower half of hindwing black with two rows of spots; the lower row on the male is orange, the female has only one row. Caterpillar black, striped with orange, yellow, and red; has six rows of bristly spines; lives on violets and white-topped asters.

2. APHRODITE. *Argynnis aphrodite*. 3 in. Tawny yellow with black markings. Caterpillar black, has six rows of bristles; lives on violets.

Argynnis cybele. Like *Aphrodite*, only paler underneath, with broader white band on hindwing. Caterpillar lives on violets.

Argynnis atlantis. $2\frac{1}{2}$ in. Like *Aphrodite*, border darker.





3. MYRINA. *Argynnis (Brenthis) myrina*. $1\frac{3}{4}$ in. Like *Aphrodite*, with darker border. Caterpillar lives on violets.



4. BELLONA. *Argynnis (Brenthis) bellona*. 2 in. Like small *Aphrodite*, but no pearl white spots on under side of hindwing. Caterpillar feeds on violets.



No pearl white spots on under side.



5. PHAETON. *Melitea (Euphydryas) phacton*. 2 in. Black, with rows of orange and white spots in border and forewing, outside border tawny red.



Melitea harrisii. Like *Phacton*, border black, no white on upper side, under side light tawny. Caterpillar feeds on honeysuckle and aster.



6. *Melitea (Phyciodes) tharos*. $1\frac{1}{2}$ in. Tawny yellow and black. Caterpillar feeds on aster.



Melitea nycteis. Like *tharos*, but larger and with more black.

VI. Whitelings.

1. CABBAGE WHITELING. *Pieris oleracca*. 2 in. White, underside of hindwing yellowish. Caterpillar green; feeds on cabbage. From Europe.



2. TURNIP WHITELING. *Pieris rapae*. 2 in. White, with black spot on tip and middle of forewing, black blotch on edge of hindwing. Caterpillar feeds on turnip. From Europe.



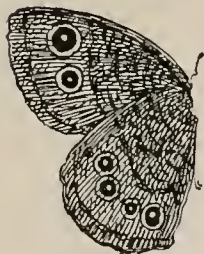
3. AMERICAN WHITELING. *Colias (Eurytus) philodice*. 2 in. Light yellow, spot on each wing and black border. Caterpillar green; feeds on clover.



VII. Wood Satyrs.



1. BLUE-EYED ALOPE. *Satyrus (Cercyonis) alope*. 2½ in.
Dark brown, broad yellow band with two eye-spots on forewing.
The female has no eye-spots on under side of lower wing.
Caterpillar feeds on grasses.



2. NEPHELE. *Satyrus nephele*. Like Alope, two eye-spots,
but no yellow band on forewing.





3. BOISDUVAL'S BUTTERFLY. *Neonympha canthus* (*Satyriodes eurydice*). 2 in. Pale yellowish brown, four spots on forewing and six on hindwing. Caterpillar feeds on grass.



4. WOOD SATYRUS. *Neonympha eurythris* (*Cissia eurythris*). 1¾ in. Dark grayish brown, two eye-spots on forewing and three on hindwing. Caterpillar feeds on grass.



5. MOUNTAIN HIPPARCHIA. *Chionobas* (*Oencis*) *semidea*. 2 in. Grayish brown, under side marbled, no eye-spots. Caterpillar feeds on sedges.



VIII. Blue-wings.



1. COPPERWING. *Chrysophanus americanus* (*Heodes hypophlaeas*). $1\frac{1}{8}$ in. Forewing reddish gold or copper color, with eight or nine spots and black border; hindwing black with copper band. Caterpillar green; feeds on sorrel.

Chrysophanus thoe. Is like *Americanus*, but much larger.



2. EPYXANTHE. *Chrysophanus epyxanthe*. $1\frac{1}{8}$ in. Dark brown with black spots, a few orange spots or broken band on hindwing.



3. BLUE-WING. *Lycæna* (*Cyaniris*) *pseudargiolus*. $1\frac{1}{8}$ in. Azure satin blue, with white fringes, pearl gray with black spots on under side. The female has a broad blackish border. Caterpillar feeds on spiræa, dogwood, and Jersey tea.



4. TAILED BLUE-WING. *Lycæna* (*Everes*) *comyntas*. $1\frac{1}{8}$ in. Violet steel blue, border blackish, one little tail and a few small orange spots on hindwing, female darker. Caterpillar pale green, with three darker stripes, sides reddish, head black; feeds on bush clover.



IX. Theclas.



1. BANDED THECLA. *Thecla calanus*. Dark brown, no spots, two tails, under side brownish gray, one blue between two red spots on hindwing. Caterpillar feeds on oak, nut, and hawthorn.



2. HOP VINE THECLA. *Thecla humulus* (*Uranotes melinus*). Dark brown, blue and red spots on hindwing, two tails, under side light buff yellow with two red spots on hindwing. Caterpillar feeds on hawthorn and hypericum.



3. CORAL THECLA. *Thecla* (*Strymon*) *titus*. Dark brown, no spots or tails, under side reddish brown, a row of red dots in border of hindwing. Caterpillar feeds on oak, wild cherry, and plum.



Thecla (*Incisalia*) *augustus*. Dark brown, two orange spots, no tail, but edge of hindwing scalloped, under side of forewing white, hindwing dark brown with broad white border, no spots.



4. STRIPED THECLA. *Thecla strigosa*. Dark brown, three eyeless spots and two tails, under side grayish brown, row of red dots on each wing, the last dot but one on hindwing blue.

Thecla edwardii. Dark brown, one orange spot and one tail, under side gray, row of orange dots on hindwing, of which last but one is blue, row of black dots on each wing.

Thecla acadica. Like *Edwardii*, but has two tails and is larger size and paler.

Thecla irus. Dark brown, two orange spots and one short tail, hind edge scalloped, under side dark brown with light border, white line across hindwing, no spots.



5. BANDED ELFIN. *Thecla (Incisalia) nippon*. Dark brown, lighter in the middle, rusty, no spots or tails, edge white, fringed and notched, under side gray marked with black, crossing scratched lines, no spots. Caterpillar feeds on pine.



6. *Thecla auburnia (smilacis)*. Rusty brown with dark border, two tails, under side green with purple and white marks, no spots.



X. Skippers. *Hesperidæ*.

Dark Brown.



1. *Eudamus (Epargyreus) tityrus*. $2\frac{1}{2}$ in. With bronzelike shine, three transparent dots on forewing, and small silver spot below, large silver blotch on under side of hindwing. Caterpillar feeds on locust.



2. *Eudamus (Thorybes) pylades*. $1\frac{1}{2}$ in. Row of small white dots across middle of forewing and shorter row near tip, two dark bands on under side of hindwing. Caterpillar feeds on clover.

Eudamus bathyllus. $1\frac{1}{2}$ in. One narrow light band across middle of forewing and one small dot near tip, broad light border on hindwing.



3. *Thanaos juvenalis*. $1\frac{1}{2}$ in. Smoky brown, six or seven white spots near tip, broad light band with eye-spots on under side of hindwing. Caterpillar feeds on bush clover, poplar, and willow.

Thanaos pepsius. Six white spots, border of black dots, and three black bands across forewing.

Thanaos lucilus. Five spots, dark border with light dots and two black bands.





4. *Thanaos briso*. $1\frac{1}{2}$ in. Almost black, gray bands, two rows of dots on wings. Caterpillar feeds on oak.

Thanaos icelus. Row of black dots on border of forewing and hindwing.

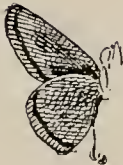
Thanaos martialis. Three irregular dark streaks and one row of dots on forewing, two rows of dots on hindwing, two rows of dots on under side of each wing.

Amblycirtes vialis. Two small dots near tip, otherwise plain. Caterpillar feeds on grasses.

Pamphila hiana. One light spot near tip, black streak across middle.

Pamphila massasoit. Plain, except one small spot in middle of hindwing.

Pamphila manataaqua. Dark and light streak in middle of forewing and double dot in middle of hindwing.



5. *Pamphila (Euphyes) metacomct*. Dark line on forewing and dark border, light blotch on hindwing, dusky blotch on each wing on under side. Caterpillar feeds on grasses.



Orange and Dark Brown.



6. *Pamphila (Atrytone) zabulon*. $1\frac{1}{4}$ in. Orange with black band around hindwing, spot on outside of band, few small streaks on tip of forewing. Caterpillar feeds on grasses.



7. *Pamphila (Anthomastes) leonardus*. $1\frac{1}{2}$ in. Orange, dark banded, dot on upper side of hindwing. Caterpillar feeds on grasses.

Pamphila mystic (Ahaton taumas). 1 in. Like *leonardus*, but smaller.



8. *Pamphila sassacus*. $1\frac{1}{4}$ in. Under side orange with dark border and streak; hindwing has broken border.

Aucyloxipha numitor. Orange with dark border on each wing. Caterpillar feeds on bush clover.



9. *Pamphila (Polites) peckius*. 1 in. Under side forewing brown with few streaks, hindwing orange with two dark bands.

Pamphila (Ocytes) metea. Dark brown, orange hook and two dots on middle of forewing, horseshoe-like mark on hindwing. Caterpillar feeds on grasses.



10. *Pamphila cernes*. $1\frac{1}{4}$ in. Under side forewing dark brown with orange streaks and three dots; hindwing pale.

Pamphila bimacula. Two spots on forewing, hindwing dark brown, under side light buff.

KEY TO DUSKFLYERS (though some fly in day time,

Feeler (antennæ) thickest in the middle, tapering towards each end, often hooked.

Body very stout : *Sphingide*



edge of forewing scalloped Nos. 1 to 7.



edge of forewing curved like an S Nos. 8 to 14.



edge of forewing rounded Nos. 15 to 22.

Body small :

some or all wings transparent *Egeriade*

wings not transparent *Zygenide*



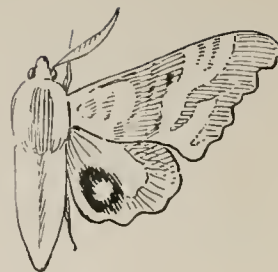
Hawk or Hummingbird Moths. *Sphingidae*.

1. *Smerinthus geminatus*. $2\frac{1}{4}$ in. Forewing grayish buff shaded with brown and dark markings, hindwing pink, blue eye-spot crossed by a back line.

2. *Paonias exocatus*. $2\frac{1}{2}$ in. Forewings light buff with darker shades and brownish mark, hindwing pink. Caterpillar feeds on apple and rose.

3. *Paonias myops*. $2\frac{1}{2}$ in. Forewing dark ash gray marked with black and brown, hindwing pink.

4. *Amphion nessus*. $1\frac{3}{8}$ in. Forewing gray and with reddish brown and black marks, hindwing pink.





5. *Thyreus abbotii*. $2\frac{1}{2}$ in. Forewing dull brown, hindwing dull yellow, and some black lines. Caterpillar feeds on grapevines.

6. *Thyris maculata*. $\frac{1}{2}$ in. Buff and dark brown, one white spot on each wing.

Thyris lugubris. $\frac{3}{4}$ in. Black with several white spots.



7. *Triptogon modesta*. $4\frac{1}{2}$ in. Forewing light buff shaded brown, hindwing rust red. Caterpillar feeds on Lombardy poplar.

8. *Philampelus achemon*. $3\frac{1}{2}$ in. Forewing reddish ash gray with dark brown marks and one square spot, hindwing pink. Caterpillar feeds on grapevines.





9. *Philampelus pandorus*. 4 in. Forewing buff and light olive with brown patches. Caterpillar feeds on grapevine.

Philampelus vitis. 3 in. Olive green, pale on hindwing and pink near body.

10. *Darapsa chærilus*. 2½ in. Forewing buff with brown marks, hindwing yellow rust color, whitish near body.



11. *Darapsa myron*. 2 in. Forewing greenish gray with olive shades, hindwing rust red. Caterpillar feeds on grapevines.

Darapsa versicolor. 2½ in. Forewing grayish marked with red brown.





12. *Deilephila chamænerii*. $2\frac{3}{4}$ in. Forewing ochre yellow and dark brown, hindwing black with pink band and a white spot. Caterpillar feeds on epilobium.

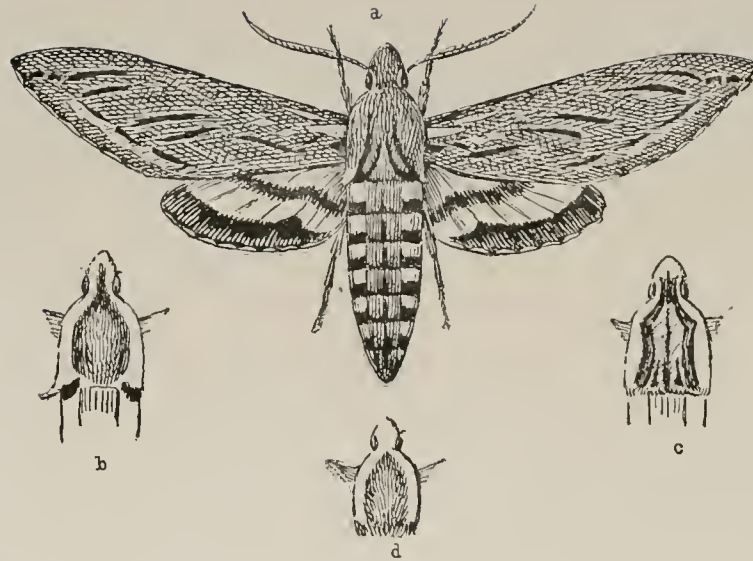
Deilephila lineata. $2\frac{3}{4}$ in. Shape and color like the last, six broad white lines on chest part and on forewing veins. Caterpillar feeds on turnip.



13. *Cressonia juglandis*. 2 in. Light buff, shaded brown. Caterpillar feeds on wild cherry.



14. *Chlærocampa tersa*. $2\frac{1}{2}$ in. Forewing buff, shaded with brown lines, hindwing dark brown with a row of white triangular spots.



15. (a) *Sphinx chersis*. 4 in. Light gray marked with white and black. Caterpillar feeds on lilac.
 (b) *Sphinx drupiferarum*. 4 in. Dark brown, first band on hindwing white. Caterpillar feeds on plum trees.
 (c) *Sphinx kalmie*. 4 in. Rusty buff and brown. Caterpillar feeds on laurel.
 (d) *Sphinx gordius*. 3 in. Dark gray marked dark brown. Caterpillar feeds on apple trees.



16. *Macrosila celus* (*quinque maculatus*). 5 in. Forewing gray, variegated with black and white, five orange spots on each side of body, and three black bands on hindwing. Caterpillar feeds on tomato and potato.



17. *Macrosila carolina*. 5 in. Like last in color, irregular marks on hindwing. Caterpillar feeds on tobacco and tomato.

18. *Ceratonia quadricornis*. 4 in. Light rusty gray shaded with dark brown, and white spot in middle of forewing, a row of black and white spots on hindwing. Feeds on elm.



19. *Daremma undulosa*. 4 in. Forewing light ash gray with dark brown marks, hindwing brown.





20. *Dolba hylasus*. $2\frac{1}{4}$ in. Forewing light ash, marked with dark red brown hindwing light brownish.



21. *Ellema harrisii*. 2 in. Ash gray with darker marks, hindwing light brownish gray.



22. *Hemaris (Sesia) thysbe*. $2\frac{1}{4}$ in. Wing partly transparent, partly maroon red, chest part olive green, legs light colored.

Hemaris diffinis. $2\frac{1}{4}$ in. Like *H. thysbe*, except chest part light yellowish, and legs black.

Hemaris gracilis. $1\frac{1}{2}$ in. Like *thysbe*.

Stemborers, Glasswings. *Egeriadae*.



23. *Melittia cucurbitae* (*ceto*). 1 in. Forewings black, hindwing transparent, edge beset with long fringe; head, end of body, and hindlegs orange spotted black. Worm lives in stem of cucumber, squash, and melon.



24. PEACH TREE BORER. *Egeria exitiosa*. 1 in. In the male both wings are transparent, point of forewing yellowish; in female forewings dusky, body steel blue. Worm lives under bark of peach trees.



25. CURRANT BORER. *Egeria tipuliformis*. $\frac{3}{4}$ in. Forewing with coppery tinge, wings transparent, body black, with collar, shoulder, and the three last rings yellow. Lives in currant stems.



26. PEAR TREE BORER. *Egeria pyri*. $\frac{1}{2}$ in. Wings transparent, body purple, black above, yellow beneath. Collar, edge of chest part, tail, two small and one large ring on middle of body, yellow. Bore in peach trees.



ASH TREE BORER. *Trochilium denudatum*. $1\frac{1}{2}$ in. Forewing brown and rust red and transparent, spot near tip, body brown and yellow, hindwing transparent. Larva bores in stems of ash trees.

Zygænidaë.



27. *Alypia octomaculata*. $1\frac{1}{8}$ in. Black with two white spots on each wing, or on male one white spot on hindwing and two on forewing.



28. *Psychomorpha epimenis*. 1 in. Black, one white patch on forewing and one gold yellow spot on hindwing.



29. *Eudryas unio*. $1\frac{1}{4}$ in. White, with dark brown marks, and on border of wing ochre yellow marks.

Eudryas grata. $1\frac{1}{2}$ in. White, with similar marks, but faint in color and blotched.



30. *Sepsis fulvicollis*. 1 $\frac{1}{4}$ in. Blackish, bright orange collar.



31. *Ctenucha virginica*. 1 $\frac{3}{4}$ in. Indigo blue with yellow head.



32. *Pyromorpha dimidiata*. 1 in. Blackish with one white patch on forewing.



33. *Lycomorpha*. 1 in. Black, the inner half of forewing and a patch on hindwing white.



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