

Article XVII.—DESCRIPTIVE CATALOGUE OF THE
BOMBYCINE MOTHS FOUND WITHIN FIFTY
MILES OF NEW YORK CITY.

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The present paper constitutes the third part of my work on the Lepidoptera found within a radius of fifty miles of New York City, and relates to the species which have been classed as Bombycine Moths. It enumerates 182 species, and should be looked upon as an aggregation of species, rather than a strict classification; the object of the work being to place on record the species found in this region, for the benefit of those who are interested in the study of our local fauna. The first part of the catalogue, the Butterflies, was published in this Bulletin in 1893 (Vol. V, pp. 241-310), and the second part, the Hawk-moths, in 1895 (Vol. VII, pp. 275-320). For obvious reasons no descriptions of the genera have been given in this paper, but with the aid of the illustrations most of them can be readily identified. The measurements are given in millimeters (25 mm. = 1 inch), and the segments or joints of the caterpillars have been numbered separately, beginning with the one behind the head as the first, counting the head as a separate organ.

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***Scepsis fulvicollis* (Hübner).**

PLATE XV, FIG. 13. FEMALE.

Fore wings blackish brown. Hind wings somewhat more blackish and transparent at the middle. Head black, vertex, base of palpi and collar bright orange. Thorax and abdomen blue black. Expanse, 35 mm.

Larva.—A dark colored dorsal line, then a pale greenish stripe on which is a row of small warts; next to this stripe is a pink line, then a pale yellow line,

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then a dark greenish slate-colored stripe on which is a row of small warts. The spiracles are situated on the lower part of this stripe, below the warts; below this stripe is a pale yellow line; between this line and the legs are two rows of small warts. From each of all the warts proceeds a thin cluster of whitish hairs. Under side pale greenish yellow. Head shining yellow. Length, 20 mm.

Food-plants.—Various kinds of grasses.

Rather common in swampy, grassy meadows from June to September. The larva spins a thin lemon-yellow cocoon. Double brooded.

***Ctenucha virginica* (Charp.).**

PLATE XV, FIG. 5. MALE.

Head black in front; vertex, base of palpi, anterior part of patagia and chest bright orange. Fore wings sooty brown, hind wings darker. Fringe of both wings white at the apex and before the hind angles. Thorax and abdomen blackish brown with a rather strong metallic blue reflection. Expanse, 40–54 mm.

Caterpillar.—Body blackish with six rows of tubercles on each side. There are four large warts on each abdominal segment. From the third to the eleventh segments inclusive, is a cluster of black hairs, the hairs forming these clusters not spreading; next to these is a row of pale yellowish or whitish spreading clusters, and below these the hair is black, in spreading clusters. The hair lowest down on each side of the body and that on each end of the body is sometimes mixed with whitish. Head red, face black. On each side of the body is a subdorsal and lateral yellow stripe, the former sometimes being almost obsolete. Length, 31 mm.

Food-plants.—Various species of grasses.

The insect is quite rare in the immediate vicinity of New York, but is common in the mountainous region towards the Catskills. It is found in July and early in August, and flies in the hottest sunshine, hovering over flowers. It is not difficult to capture, since its flight is not strong nor rapid. In cloudy days it clings to the stems of plants or flowers, and can be easily taken with the fingers. The species is single brooded, and hibernates in its larval state. When fully grown the larva spins a cocoon composed entirely of the hairs from the body, which are held together by the minute spinules with which they are beset. The larva may be found fully grown in June.

Lycomorpha pholus (*Drury*).

PLATE XV, FIG. 9. MALE.

Wings black with the basal half of the fore wings and basal third of the hind wings bright orange above and below. Head, abdomen and legs black. Thorax black with the patagia orange. Expanse, 25-30 mm.

Caterpillar.—Gray, dotted with pale green, with thin, very long, blackish hairs. Head bilobed, clypeus large, lower part pale; brown with two pale green, narrow, transverse irregular lines; hairs short, white. Body rather flattened, brown gray with many irregularly triangular, transversely streaked patches; a geminate, rather large, anterior segmental, dorsal, pale yellow one, present on segments 4-10, is most distinct; the other patches are whitish, smaller and confused. Legs pale, two setæ on the obscurely corneous plate.

Food-plants.—Lichens.

Not common in the immediate vicinity of New York, but frequent in certain districts on the flowers of goldenrod in August and early September. It flies in the hottest sunshine. The larva spins a cocoon, composed of a thin web, on one side of a stone or on a fence. In coloration closely resembles lichen-covered rocks.

Pyromorpha dimidiata *H.-S.*

PLATE XV, FIG. 10. FEMALE.

Fore wings with outer half semitranslucent black, basal half above the median vein ochreous. Hind wings semitranslucent black. Expanse, 20-25 mm.

Caterpillar.—Head pale brown, lighter in the suture and retracted under the hood of the first segment, which is large with a dark brown, divided cervical shield. Body thick and robust, not tapering, with dense, short hairs. Color dark velvety brown, reduced to a series of longitudinal and transverse lines by the large, rounded and slightly oblique pale gray areas which surround the upper parts of the warts. The warts are brown, forming dark centres to the pale patches, not so dark as the ground color. Hairs along the extreme sides conceal the subventral region. Feet pale. A circular pale area surrounds the spiracles on joints five and ten.

Food-plant.—Dead and decaying oak leaves, the larva living on the under sides of the fallen leaves.

Not common and quite local. The moth lives amongst grass, especially along the borders of wood. Its flight is short and soft, thus rendering it easy to capture. They appear about the middle of June and last only a few days. The larva lives solitary, becomes fully grown in September, and passes the winter in a cocoon.

Harrisina americana (*Guérin*).

PLATE XV, FIG. II. MALE.

Fore wings, hind wings, head and body black, with a very slight blue-green lustre. Collar broadly orange. Expanse, 20-25 mm.

Caterpillar.—Yellow with a transverse row of black spots or warts on each segment, bearing a tuft of velvety black hair. First segment entirely black with a yellow edge, while the spots on the last two segments run together. Head small, brown, retractile and usually hidden in the first segment. Length, 14 mm.

Food-plants.—Grape-vine, Virginia-creeper and Judas-tree (*Cercis canadensis*).

The larvæ may be found during July and August. They are gregarious, and when young they feed together, arranging themselves side by side, beginning at the edge of the leaf and eating the softer parts, leaving the small veins. When fully grown they disperse over the vine. They spin a small, tough, whitish, flattened cocoon. Some chrysalids produce the moth in a few weeks, but the majority are not evolved until the following spring. Another form of the larva occurs which is banded with purple and has a white lateral stripe.

Acolothus falsarius *Clem.*

Wings and body black, with greenish or bluish reflections. Collar reddish. Expanse, 13-14 mm.

Very rare in this neighborhood, but quite common in the Southern States. It may be readily known by its small size, uniform color and reddish collar. The larva is said to live solitary or not more than two together on a leaf, in which they eat small holes. It lives on grape-vine and Virginia-creeper.

***Psychomorpha epimenis* (Drury).**

PLATE XV, FIG. 3. MALE.

Fore wings black with bluish scales, and a large pale yellowish white patch, from the costa to nearly the hind angle, indented on the inner side. Hind wings black, with a large subovate brick-red patch. Body entirely black. Expanse, 25 mm.

Caterpillar.—Ground color white, banded transversely with four black stripes on each segment. The contrast of the black and white gives it a bluish appearance. Third and fourth stripes are usually farther apart than the other two with two or more black dots at the sides. Eleventh segment has an elevation or hump, which with the cervical shield, anal plate, under side and legs, are dull orange. Head reddish yellow with black dots. Under side pale, mottled with dark and rows of dots on the legs. Length, 25 mm.

Food-plant.—Grape.

The moth is single brooded and comes forth from the pupa about the middle of April and flies for about two weeks. The larvæ fold together a leaf in a nest-like fashion in which they live, from one to about five or six individuals together. When about to transform they gnaw their way into soft wood and close up the entrance with silk and chips.

***Alypia octomaculata* (Fabr.).**

PLATE XV, FIG. I. FEMALE.

Fore wings black with two large pale yellow spots. Hind wings with two white spots; the basal one in the male is very much enlarged. Thorax black with a broad yellow stripe on each side. Abdomen black. Legs black, fore and middle tibiæ orange. Expanse, 25–30 mm.

Caterpillar.—Head and cervical shield shining orange yellow, marked with black dots. Across the middle of each segment is a transverse orange band, with four alternating, bluish white and four black transverse stripes. Below the spiracles is a wavy white stripe interrupted by the orange bands. Over the body are also a number of small black, piliferous spots, each bearing a short white hair. Eleventh segment with a prominent elevation. Length, about 30–35 mm.

Food-plants.—Grape and Virginia-creeper.

Very common in yards and gardens about houses, especially in New York City. It flies during June and July, and the larvæ do considerable damage to grape-vines, sometimes completely defoliat-

ing them. It seems strange that this insect should prefer cultivated places about dwelling houses instead of the woods, where it is very rarely, if ever, found. The larva constructs a cocoon of chips or gnaws into wood to pupate. Single brooded.

Eudryas grata (*Fabr.*).

PLATE XV, FIG. 4. FEMALE.

Fore wings chalky white, with a broad, rich brown outer border, narrowly bordered within with olive green. Through the brown border is a wavy blue line composed of blue scales. Along the costa, from the base to about the middle, is a broad brown border, with bluish scales, beneath and at the end of which are two olive green connected patches. On the inner margin is a large olive green patch contiguous with the outer border. Hind wing light ochre yellow with a brown outer border, from below the apex to the anal angle. Head and thorax along the middle deep brown with raised bluish scales. Patagia white. Abdomen ochreous, with a few black spots along the back, under side white. Expanse, 40-45 mm.

Caterpillar.—On the middle of each segment is a transverse orange pink band, on each side of which are three black rings alternating with two bluish white ones. Each orange pink band has a number of black dots. Head orange, dotted with black. Eleventh segment with a prominent elevation. Length, 37 mm.

Food-plant.—Grape.

The larva, when fully grown, bores into decaying wood, excavating a cavity in which it transforms, and which it closes with chips fastened together with a glutinous secretion. It is single brooded. The moth emerges in June and the caterpillars may be found during July and August. Sometimes the moth escapes from the chrysalis late in the same season, and the species is therefore partly two-brooded.

Eudryas unio (*Hüb.*).

PLATE XV, FIG. 8. MALE.

Fore wings chalk white with a broad rusty brown outer border which has a narrow, scalloped sepia brown inner margin. Through the rusty border is a broad scalloped line of bluish scales. Along the costa is a broad rusty brown band, scaled with blue, extending to the outer third of the wing. On the inner margin, contiguous to the outer border, is an olive brown patch, which sends a narrow ray of olive green towards the base of the wing. Hind wings pale

ocherous with a broad rusty brown outer border. Head and thorax along the middle with raised blackish scales. Patagia white. Abdomen ocherous with a row of black spots along the back and sides. Underneath white. Expanse, 30-35 mm.

Caterpillar.—Similar to that of *E. grata*, but smaller and more heavily marked with black, both in its bands and spots. The black bands are much wider than the white ones, while in *grata* they are about one-half the width. The spots on the head are larger than those of *grata*. The spots on the hump on the eleventh segment are connected by the black band to which they are united, while in *grata* the spots are isolated. The feature which seems to distinguish *unio*, is the blackish coloring above the prolegs and continued on the two following segments, the three piliferous spots above the prolegs being connected with it. Length, 30 mm.

Food-plants.—Evening Primrose and *Epilobium*.

Double brooded, from June to August. The larva when ready to pupate eats into decaying wood or other soft substances to transform, closing up the entrance of the channel or cavity with chips. It often forms its cocoon in the stems of its food-plant. Not common, in damp fields.

Nycteola lintneriana Speyer.

PLATE XV, FIG. 14. MALE.

Fore wings gray, more or less clouded with dark gray; before the middle is an irregular zigzag bigeminate transverse band, with indications of a transverse line beyond the middle. There is also present a subterminal indistinct band composed of dots. In the cell is a round blackish spot, and a black mark outside the basal band above the fold. Hind wings grayish, whitish at the base. Expanse, 22 mm.

Not common. The caterpillar lives on Willow. It spins an elongate, almost parallel cocoon, flattened below, bluntly rounded at the hind end, and flatly pinched together, at the part where the moth escapes.

Nola ovilla Grote.

Light gray, with indistinct, curved, transverse, blackish lines, more or less broken, the one beyond the middle composed of small dots. Hind wings whitish or dusky. Expanse, 16-18 mm.

Caterpillar.—Body broad and much flattened, rather short, with four pairs of well-developed abdominal legs, the first pair being situated on the seventh

segment. The body is dirty whitish, with a dark linear dorsal line, a dark dorsal discoloration behind the head, another in the middle of the body and another near the end. The body is hairy, but not densely so; on each segment are four dorsal tubercles from which radiate short dusky hairs; on the sides are larger and longer tubercles from which arise lateral very long hairs, being as long as the body is broad. The larger hairs are simple, not barbed, but the shortest are finely though slightly barbed. The tubercles are dirty white, concolorous with the rest of the body. Length, 12 mm.

Food-plant.—Oak.

Probably double brooded and not common. The moth may usually be found resting on the trunks of trees in May and June. The larvæ occur in September. The cocoon is boat-shaped, flattened, oval cylindrical, and closely attached to the surface of the leaves.

***Nola melanopa* Zeller.**

PLATE XV, FIG. 19. FEMALE.

Head black; thorax and abdomen chalky white. Fore wings chalky white; costa broadly black and with a broad, oblique, transverse band of the same color across the middle; outer margin grayish with black points. Hind wings grayish. Expanse, 19–20 mm.

Not common. The moth may be readily known from its congener, by its white color with black, oblique band and markings. The earlier stages are unknown.

***Nola trinotata* (Walker).**

PLATE XV, FIG. 17. MALE.

Light gray, with three wavy, blackish, transverse lines, more or less distinct; at the base of the costa is a short blackish dash, and about the middle a blackish patch. Hind wings gray. Expanse, 16–18 mm.

Caterpillar.—Head round, pale yellowish, and thickly marked with black; partly withdrawn within the first joint. Body somewhat flattened, robust and of almost uniform width; last segment smaller, pale yellow; a black dorsal shade line and a fainter subdorsal one, which is somewhat broken into oblique portions as seen under a lens. Three rows of warts, one per segment. First row above subdorsal line, second below it, third substigmatal and a fourth row below the subventral fold at the bases of the legs. All the warts bear a few white hairs. First and second rows of warts partly black and partly pale

brown. Third row ocher. Thoracic feet slender; abdominal legs only present on joints 7, 8, 9 and 12. Length, 12 mm.

Food-plant.—Witch-hazel.

Not common in this vicinity. Found in open woods and overgrown fields. There is only one brood a year. The larvæ form their cocoons late in June and early in July, and the moth appears the following spring. The cocoon is constructed on a piece of wood from little bits of bark. It is flat at the sides and narrow, tapers upward from the hind end, and is truncate anteriorly at the end where the moth emerges. Length, 12 mm.; width, 2 mm.

Argyrophyes cilicoides Grote.

Chalky white. Fore wings dusky beyond the middle and with a subterminal line of the same color; at the end of the cell is a raised patch of black metallic scales. Hind wings white, dusky outwardly. Expanse, 16–18 mm.

Not common. Earlier stages not known. The moth looks like an *Erastria*.

Argyrophyes pustulata (Walker).

White. Fore wings with a small black dot at the base, and on the costa a larger brown spot, with bluish scales; across the middle of the wing is a broad black band, which becomes narrower as it reaches the inner margin; on this band are metallic bluish scales; on the fold the transverse band is broken; beyond the band is a wavy dusky line; the terminal margin also lined with a dusky shade. Hind wings white, dusky outwardly. Expanse, 17 mm.

Not common. Earlier stages not known.

Clemensia albata Packard.

PLATE XV, FIG. 16. MALE.

Fore wings white, with numerous fine, brown scales. A transverse, anterior, median, posterior and terminal line composed of black spots, more or less distinct. The space between the median and posterior lines often filled with brown. On the disc is a rather large and distinct black spot. Hind wings dirty whitish, with a terminal row of black dots, often wanting. Expanse, 17–24 mm.

Not common. Found in woods in June. Early stages not known.

***Crambidia pallida* Packard.**

PLATE XV, FIG. 12. MALE.

Almost entirely uniform drab with the veins of the fore wings lined with a pale shade, and the hind wings basally somewhat paler. Expanse, 21 mm.

Rather rare in this neighborhood, being found in open meadows in August. Earlier stages not known. The moth resembles a *Crambus* in general appearance.

***Hypoprepia miniata* (Kirby).**

PLATE XV, FIG. 6. MALE.

Fore wings bright pinkish red with a broad longitudinal band beneath the costa, another similar band above the inner margin, and a short one from the outer margin to nearly the middle of the wing, all lead color. Hind wings with basal half red, outer half lead color. Abdomen pink in the male, and partly lead color above in the female. Expanse, 30-40 mm.

Found during July and August, and is common, though not abundant. Earlier stages not known. Possibly a variety of the following species.

***Hypoprepia fucosa* Hübner.**

Head and thorax yellow or pink; abdomen wholly pink in the male and lead color above in the female. Fore wings marked with broad lead-colored bands as in *H. miniata*, but the spaces between are yellow or partly pink outwardly. Hind wings largely pink with a narrow lead-colored outer border. Expanse, 25-30 mm.

Caterpillar.—Body dark reddish brown or brownish black, with a dorsal, stigmatal and indistinct subdorsal yellow line; subdorsal space mottled with yellow; warts black, and from each proceeds one or two stiff black bristles; head brownish black with a few short whitish hairs on the face. Length, 16 mm.

Food-plants.—Mosses and Lichens growing on trees.

Not rare in July and August; sometimes quite common.

***Cisthene unifascia* (G. & R.).**

Head yellow; thorax yellow or partly lead color; abdomen pink. Fore wings slate gray, with a more or less broad yellow band across the outer third and a more or less broad yellow stripe along the inner margin from the base to

the cross band. Hind wings wholly pink or with the apex slate gray, or with a rather broad lead-colored outer border. Expanse, 14-19 mm.

Not common. Early stages not known.

Cisthene subjecta Walker.

Head and abdomen pink; thorax yellowish. Fore wings lead colored with a yellow spot on the costa before the apex and a broad stripe of the same color along the inner margin. Hind wings pink with a lead-colored border. Expanse, 17 mm.

Caterpillar.—Form flattened and nearly the same width throughout. Pale cinereous, variegated with fine curved lines and dots of purple brown; medio-dorsal stripe pale, margined on each side with a distinct purple line, not continuous, but composed of very minute dashes and dots. Under side translucent buff. Head and legs colored similarly to the dorsum. Clothed with long, fine light hairs. Length, 10 mm.

Food-plant.—Lichens.

Not common in this vicinity. The species is probably double brooded. The moth appears in May and June, and young larvæ may be found late in fall and early in spring hibernating under bark; fully grown larvæ have been found in May. The pupa is formed in a thin web-like cocoon appressed to the under side of the bark.

Lithosia casta Sanborn.

Body and wings pure white; under side of fore wings and costal half of hind wings cinereous. Expanse, 22 mm.

May be readily known by its pure white color. Found in dry sandy fields in August. The earlier stages are unknown.

Lithosia bicolor Grote.

Head, thorax and abdomen slate gray; collar and tip of abdomen ochraceous. Wings above and below slate gray, with the costa of the fore wings ochraceous. Expanse, 25-33 mm.

A northern species possibly found in this vicinity. Earlier stages unknown.

***Euphanessa mendica* (Walker).**

PLATE XV, FIG. 2. MALE.

Semitransparent, pale straw yellow with the borders deeper in color. Across the fore wings are two transverse rows of large and small spots and a single spot close to the outer border between veins three and four. Hind wings pale semitransparent yellowish. Body yellowish. Expanse, 22-30 mm.

Found in open woods in June and July. Early stages not known.

The species is placed by some authors in the Geometridæ, where it without much doubt belongs.

***Euphanessa meridiana* Slosson.**

PLATE XV, FIG. 7. MALE.

Pale yellowish with two rows of small dots across the fore wings, one row before and one row beyond the middle. Hind wings yellowish. Expanse, 20 mm.

Very much resembles *E. mendica*, but it is smaller and yellower, and lacks the single spot between veins 3 and 4 close to the outer border. The rows of spots are also much smaller.

The early stages are not known. Placed by some authors in the Geometridæ. It appears in June and July.

***Eubaphe læta* (Boisd.).**

Fore wings uniformly brown with the costa very narrowly brick-red. Hind wings with basal two-thirds bright brick-red, outer third black. Head, thorax and abdomen brown. Under side of all the wings with basal two-thirds brick-red, outer parts blackish brown. Expanse, 18-27 mm.

Found in dry woods in June. Early stages not known.

***Eubaphe opella* (Grote).**

Fore wings tawny, sometimes shaded with more or less black. Hind wings reddish or partly so, with a discal spot. Expanse, 30-33 mm.

Var. **nigricans** Reak.—In this variety the whole insect is suffused with black, or the fore wings are tawny, with hind wings smoky brown.

Quite rare in this vicinity. It is found in dry hilly places, June-August. Early stages not known.

***Eubaphe immaculata* (Rearkirt).**

Fore wings rosy red, or shaded over the entire surface with fawn color, or partly shaded with brown; sometimes there is a faint whitish spot below the middle of the wing. Hind wing rosy and without markings. Expanse, 20-30 mm.

Var. ***trimaculosa* Reak.**—Like *immaculata*, but with a subterminal row of three more or less distinct spots on the hind wings, and the two near the anal angle more or less connected.

Rather common, locally, in dry places, in overgrown fields. June-September. Early stages unknown.

***Eubaphe aurantiaca* Hübner.**

Fore wings tawny brown to yellowish fawn color, sometimes with a decided rosy tinge, with a more or less obscure, distinct discal dot, and sometimes with one or more whitish spots. Across the outer part of the wing a more or less distinct transverse band. Hind wings rosy with a rather broad black outer border and discal dot; sometimes the border is more or less broken into spots and sometimes they are entirely absent. Expanse, 18-25 mm.

Var. ***aurantiaca* Hübner.**—Entirely immaculate. Fore wings pale, tawny yellowish. Hind wings rosy.

Var. ***rubicundaria* Hübner.**—Like *aurantiaca* but with a terminal black border on the hind wings.

Var. ***ferruginosa* Walk.**—Has the black terminal border on the hind wings broken into spots, and a discal dot.

Var. ***brevicornis* Walk.**—(Plate XV, Fig. 15.) Similar to *ferruginosa* but has the broad continuous terminal band on hind wing.

Var. ***quinaria* Grote.**—Fore wings brown with five whitish spots.

Var. ***bimaculata* Saund.**—Like *quinaria*, but has only one whitish spot on each of the fore wings.

Var. ***choriona* Reak.**—Like *quinaria*, but with two whitish spots on each of the fore wings.

Common in dry overgrown fields from June to September. The forms *ferruginosa* and *brevicornis* are most abundant. The form *aurantiaca* is more abundant southward, while *quinaria* and allied forms are quite scarce. Earlier stages not known.

Haploa clymene (*Brown*).

PLATE XV, FIG. 21. FEMALE.

Fore wings creamy white with a dark brown stripe along the costa, from the base nearly to the apex; another stripe along the outer border which is widest centrally, and another brown stripe along the inner margin, sending a blunt projection upwards to beneath the end of the cell. Hind wings yellowish ochereous, with a rounded dark brown spot beneath the middle. Head and abdomen ochereous; thorax creamy white with a broad dorsal band which runs to nearly the end of the abdomen. Expanse, 38-50 mm.

Caterpillar.—Bright yellow with white lateral stripe, mottled along its upper edge with bright red; anal end faced with red markings. Tubercles with brown hairs.

Not common. Found in July and August. More information is needed about the earlier stages and habits. The caterpillar lives on low plants.

Haploa lecontei (*Boisduval*).

Fore wings white; costa and inner margin broadly bordered with brown, and from a little below the apex to the outer fourth of the inner margin is an oblique transverse band, and two short transverse bands run from the costa to this oblique stripe, and one near the base of the wing from the costa to the stripe along the inner margin. The outer border is also rather narrowly bordered with brown. Sometimes the stripes are more or less broken, the white spaces between becoming confluent. Hind wings pure white. Head ochraceous. Thorax and abdomen white, with a brown stripe along the back. Expanse, 38-45 mm.

Var. **confinis** *Walker*.—White with costa and inner margin broadly striped with brown; an oblique band from the apex to the stripe on the inner margin near the hind end. It differs from the type form by the absence of the three short transverse bands. Sometimes there is a short projection from the costa in the white field, an indication of the middle band.

Var. **militaris** *Harris*.—White, costa, inner margin and outer border brown, as in the preceding form, but the oblique band from the apex is absent, being reduced to a short projection upwards from the stripe along the inner margin.

Var. **vestalis** *Clemens*.—This variety is white without any markings whatever. The head, legs and extreme edge of costa ochereous.

Caterpillar.—Black, with rich yellow dorsal and lateral lines.

Food-plant.—*Cynoglossum*.

Common in certain localities in New Jersey, especially near Plainfield. More information regarding the life history is needed.

Haploa contigua (*Packard*).

PLATE XV, FIG. 20. MALE.

Fore wings pure white, with a dark brown stripe along the costa to nearly the apex, and another stripe along the inner margin; from the costa, a little beyond the middle, is a transverse band running obliquely across the wing and joining the stripe along the inner margin at the hind angle; from a little below the apex is another stripe running downward and joining the oblique band at the middle. This latter stripe is sometimes absent. Hind wings pure white. Head ochreous; thorax and abdomen white with a brown stripe along the back. Expanse, 35-45 mm.

Rather scarce in this vicinity. Early stages not known.

Utetheisa bella (*Linn.*).

PLATE XV, FIG. 18. FEMALE.

Fore wings white with five broad orange or orange-ocherous transverse bands, between each of which is a transverse row of black dots in the white ground color. Hind wings bright pink with a black border and a subapical streak confluent with the border; before the anal angle is also a spot confluent with the border. Head and thorax white with black dots; abdomen white. Expanse, 32-45 mm.

Var. **terminalis** *N. & D.*—Differs in having no pink on secondaries, being white with a black border. On fore wings the orange bands are indicated on costa and slightly near internal margin and subterminally. Black dots present only on costa, at base, and terminally.

Caterpillar.—Head chestnut brown, smooth, shining. Ground color of body deep buff, with orange tint. Each segment has a black transverse mark deeply notched before and behind, and edged broadly with white, bearing rather long hairs, those on the dorsal region black, of the lateral, white. Mouth parts white. Abdominal legs orange, banded with black and white. Length, 30 mm.

Food-plants.—Rattle-box (*Crotalaria*), *Lespedeza*, etc.

Very common in dry fields in June, and again more plentifully in August and September. Double brooded. The caterpillar spins a cocoon under stones and loose roots.

Cycnia egle (*Harris*).

PLATE XVI, FIG. II. FEMALE.

Wings uniform leaden gray; fore wings sometimes sprinkled with paler shades. Head and thorax lead gray; abdomen ochereous above, with a row of black dots along the back and extreme sides, with the under side whitish. The abdomen of the female is blunt and tufted with whitish at the tip. Expanse, 33-44 mm.

Caterpillar.—Head glossy jet black. Body and legs blackish. Warts black, with bunches of rather long hairs along each side on the second, third, eleventh and last segments, those on the fourth and last two segments mixed with white. On each side of the back the tufts of hairs are orange and black along the middle. The hairs on the 2-4 and 11-12 segments are longer than the rest, and the hairs along the extreme sides are much shorter and mixed with white. Length, 30 mm.

Food-plants.—Various kinds of Milkweed.

Double brooded and common everywhere. The first brood of moths, which appears in June, is darker in color and without markings, while the second brood, which comes forth during the end of July to about the middle of August has a decided band and shades of whitish scales on the fore wings much paler than the ground color. The caterpillar lives socially, on the under sides of the leaves, and spins a cocoon, interwoven with thin hairs, on the ground under stones.

Cycnia tenera *Hübner*.

PLATE XVI, FIG. IO. MALE.

Wings pure white with the costa of the fore wings ochereous. Head, collar and anterior part of thorax ochereous, hind part of thorax paler. Abdomen ochereous, with a row of black dots along the back and sides. Under side whitish, with a row of obsolete black dots on each side. The costal region of the fore wings beneath is smoky brown. Expanse, 28-40 mm.

Caterpillar.—Head silvery gray. Body whitish, with all the warts concolorous, and the tufts of white hairs are spreading, forming an even coat and longer at the ends. Length, 28-30 mm.

Food-plants.—Dogbane (*Apocynum*).

Common wherever its food-plant occurs, and double brooded, occurring from June to the middle of August. The larva feeds

at night, usually hiding during the day at the foot of the food-plant. Spins a rude cocoon intermixed with its hair.

Cycnia eglenensis (*Clemens*).

Wings uniform lead gray, with the costal edge of the fore wings to about the middle narrowly margined with orange ochereous. Head orange ochereous. Thorax lead gray, with an orange ochereous spot on each side in front in line with the stripe on the costa. Legs, and thorax beneath, mouse gray; coxæ of anterior legs orange ochereous. Abdomen ochereous above, with a row of black dots along the back and sides. Under side of wings lead gray. Expanse, 28-35 mm.

Summer form: inopinatus Hy. Edwards.—Wings almost pure white or leaden white, otherwise marked with ochereous like the lead-colored form.

Caterpillar.—Head small, shining, dull orange. Body orange, somewhat paler than the head, with small black warts, each of which bears a thick bunch of evenly cut, dark mouse gray hairs, those on the third segment longer, and those on the second segment still longer, and directed forwards over the head. Length, 25 mm.

Food-plants.—Different species of Milkweed.

The moths from the pupa which have over-wintered are lead gray, and the offspring from this brood are whitish lead color or almost pure white and resemble *C. tenera*, but differ in having the thorax light lead color, while in *tenera* the anterior portion of thorax is ochereous. The ochereous costal stripe is also narrower than in *tenera*.

The gray form appears in May and June, and the white form the middle of July. The larvæ live socially when young, but scatter as they grow older. They form their cocoons under loose stones or leaves. The cocoon is composed of the hairs of the larva held together by silken threads.

Cycnia oregonensis (*Stretch*).

Fore wings very light smoky brownish, with the veins whitish. Hind wings white. Under side of wings like the upper. Head orange ochereous. Thorax light in front, paler behind. Abdomen ochereous, with a row of black dots along the back and sides. Under side pale smoky brown. Expanse, 37 mm.

Very rare. More common in the Northern States, and found from the Atlantic to the Pacific coast. Earlier stages not known.

[*September, 1898.*]

Halisidota tessellaris (*A. & S.*).

Pale straw color with fine darker transverse bands which are lined on each side with blackish brown. The middle band does not reach below the middle of the wing; at the extreme base is also a trace of a band. Sometimes the bands are more or less broken or confluent. Hind wings semitranslucent, pale straw yellow. Head and thorax straw yellow, the patagia lined with green inwardly. Abdomen ochereous yellow above, straw yellow beneath. Expanse, 38-48 mm.

Caterpillar.—Head polished black, mouth parts varied with white. Body black above, pale on the under side, covered above with dense hairs, proceeding from little warts in evenly-shorn brushes or tufts, which vary in color in different specimens from light gray to brownish gray and from yellow to ochre yellow and pale yellowish brown. On the second segment behind the head is a lateral black pencil and two white ones under it, the black pencils directed forwards. On the third segment one lateral black pencil and one white one under it. On the eleventh segment one lateral black and white pencil directed obliquely backwards, and one on the twelfth segment which is either whitish or the color of the tufts of the body. Length, 30 mm.

Var. *Living on Sycamore.*—Head pale orange brown, labrum and antennæ white. Body white with black warts; hairs pale straw yellow or whitish, with orange and white pencils.

Food-plants.—Oak, Chestnut, Hornbeam, Willow, Poplar, Elm, Beech, Juneberry, Locust, Maple, Sweet-gum, Tulip-tree, Hickory, Walnut, Witch-hazel, Ash, Huckleberry, Linden, Sycamore, etc.

Very common everywhere in this neighborhood. The larvae are very variable in color in different individuals, which feed upon many kinds of plants, while those which feed on the Plane tree or Sycamore (*Platanus*) are always pale straw yellow or whitish with the head pale yellowish brown and the pencils orange. The moth makes its appearance during June and July, and is single brooded. The larva when fully grown spins an elongate oval cocoon chiefly composed of its hairs, which are held together by loose silk. While there is considerable variation in the caterpillars which feed upon mostly all kinds of plants from those which live on the Sycamore, the moths, however, are exactly the same in color and markings.

Halisidota caryæ (*Harris*).

PLATE XVI, FIG. 13. MALE.

Fore wings pale straw yellow, heavily washed with ferruginous scales forming a shade beyond the cell to the apex; from near the base of the costa to

above the hind angle is a transverse ferruginous streak or line. Across the wing are five rows of rounded spots, the middle row not extending across the wing; the three outer rows are white and the two basal rows pale straw yellow. The veins are also marked with ferruginous. Hind wings pale straw yellow. Head, thorax and abdomen above straw yellow, the thorax with brown marks. Under side pale straw yellow. Expanse, 40-50 mm.

Caterpillar.—Head shining jet black. Body whitish with black spots and warts; junction of segments also black. Bunches of hairs from the warts white, and a row of eight black tufts along the back from the fourth to last segments; two long pencil-like black tufts on the fourth and tenth segments, and four white pencils on the second and third, and two on the eleventh and twelfth segments. Legs black outside. Under side of body transversely streaked with black. Length, 38 mm.

Food-plants.—Oak, Elm, Hickory, Walnut, Maple, Willow, Poplar, Chestnut, Ironwood, Hornbeam, Linden, Larch, Locust, Apple, Cherry, etc.

Very common everywhere in this neighborhood. The moth lays her eggs in a mass on the under side of a leaf, and the young larvæ live socially until they have reached their last moult, when they scatter over the tree. The cocoon is oval, much larger than that of *tessellaris*, and grayish with many fine spinules from the hairs of the larvæ protruding. It is single brooded, the moth appearing late in May and in June, and the larvæ in June to September.

***Halisidota maculata* (Harris).**

Fore wings light yellow with five or six more or less distinct confluent transverse bands of a rusty brown color. Hind wings pale straw yellow. Head, thorax and abdomen light yellow; the thorax sometimes having two brown streaks or shades. Expanse, 35-44 mm.

Caterpillar.—Head black with a faint white streak down the front as far as the middle, where it becomes forked. Body above black, with the hairs from the warts thick. On the second, third and fourth segments the hairs are mixed with yellow and black, those on the second and third segments overhanging the head. From the fourth to the eleventh segments, inclusive, is a row of black tufts along the back, the largest of which are on the tenth and eleventh segments. The fourth and eleventh segments have also a black pencil on each side. The hairs on the sides of the body, from the fifth to the tenth segments, are bright yellow, while those on the sides of the last segment are mixed with black. On the third, fourth, eleventh and twelfth segments are a few long, spreading hairs, much longer than the rest. Length, 38 mm.

Food-plants.—Willow, Alder, Oak, Poplar.

The moth appears early in June, and the larva may be found in August and September. The cocoon is yellowish gray, oval, and is constructed of silk, with the hairs of the caterpillar interwoven. Quite rare in this vicinity, but common in the Northern States, and westward.

***Ecpantheria ocularia* (Fabr.).**

PLATE XVI, FIG. 12. FEMALE.

Fore wings white with transverse rows of black spots or rings more or less filled with black. Hind wings white with a black streak along the inner border, and in the female a terminal row of large and small black spots. Thorax with black rings in the female, and in the male these are usually spots with metallic blue reflections. Abdomen black with a metallic reflection; along the back a row of quadrate orange spots and a lateral irregular line. Expanse, male, 55-65 mm.; female, 75 mm.

Caterpillar.—Head black, polished, brown at sides and below. Cervical shield brown black. Body above black, inclining to brown laterally, bright red-brown between the segments, showing in strong contrast, especially between segments three to ten, when the larva curls up, but scarcely visible when straightened out and contracted. Warts with long, stiff, bristle-like black hairs. Under side purplish brown, as are also the legs. Length, 60 mm. or more.

Food-plants.—*Plantago*, and other low plants.

Not common. The moth comes forth in May and June, and the caterpillar becomes fully grown in August or early fall, in which state it over-winters. It feeds mostly at night, and during the day usually hides under loose stones or bark, especially the latter. In early spring the caterpillar feeds for a few days on low plants, and then forms a loose, thin cocoon, through which the pupa can be seen. The caterpillar when disturbed rolls up in a ball or hedgehog-like manner, and then the sutures of the joints are seen to be red, in strong contrast to the rest of the body.

***Leucarctia acræa* (Drury).**

PLATE XVI, FIG. 7. FEMALE.

Fore wings white, with many small black spots, sometimes forming irregular transverse rows. Hind wings of the male ocherous, with a few black spots. Hind wings of female white with a few black spots. Head and thorax white. Abdomen ocherous above, last two segments and under side white; along the back and sides a row of black spots. Expanse, 45-63 mm.

Caterpillar.—Head glossy black, with the suture in front white. Body along the dorsal region dark sepia brown, minutely speckled with black. Along the sides there are indications of two very much broken stripes on a paler ground. Spiracles white and conspicuous. Warts along the back blackish with the long hairs sepia brown. Warts along the sides dull orange with the hairs orange brown. Sometimes the hairs on the back are the same as along the sides. Length, 60 mm.

Food-plants.—Clover, *Melilotis*, *Plantago*, Dock, and many other species of low plants.

Common everywhere and double brooded, the first brood of moths appearing in May and June, and the second in July and August.

***Pyrpharctia isabella* (A. & S.).**

PLATE XVI, FIG. 5. FEMALE.

Fore wings ochereous yellow, with a small blackish spot at the end of the cell and traces of dusky, wavy transverse bands, these bands more or less distinct or wanting. Hind wings in the male pinkish; pale whitish ochereous in the female, with discal and submarginal spots. Head, thorax and abdomen ochereous, the latter with a dorsal and lateral row of black spots. Expanse, 45-55 mm.

Caterpillar.—Head jet black, shining. Body black. Warts and hairs on first four and last three segments wholly jet black, while those on the segments between are rusty brown, standing in strong contrast with the black ends of the body. Hairs strong and bristle-like, and very dense. Length, 40 mm.

Food-plants.—Almost all kinds of low plants.

Very common everywhere, especially in open fields and vegetable gardens. It is double brooded, the first brood appearing in June and the second in August. The caterpillar may be readily known by its reddish brown color with each of the ends black for some distance. It hibernates under loose stones, boards or bark of trees. Spins an oval cocoon.

***Phragmatobia fuliginosa* (Linn.).**

PLATE XVI, FIG. 6. FEMALE.

Fore wings dark blackish brown with a reddish tinge, sometimes with one or two dark, wavy transverse lines, and with a dark spot at the end of the cell. Hind wings reddish with a black outer border which is sometimes broken; sometimes the entire outer half is black or with only a little red at base, or it is

entirely black. Head and thorax deep brown red. Abdomen red with a black line along the back and a lateral row of spots. Expanse, 30-35 mm.

Caterpillar.—Head small, polished, black. Body black or slate color, with pale yellowish dorsal and lateral lines, the space between them being closely covered with black wavy lines formed of transverse specks. Spiracles clear white, sometimes with a broad yellowish line below. Under side of body black. Warts on body black, each with a dense bunch of chestnut colored or ochreous brown hairs, all of equal length. Length, 28 mm.

Food-plants.—Golden-rod, Skunk-cabbage, *Eupatorium*, Iron-weed (*Vernonia noveboracensis*), and other low plants.

The caterpillar when disturbed falls to the ground, concealing itself at the base of its food plant, and the moth has much the same habit. It is found in swampy meadows overgrown with low plants. The caterpillar hibernates and may be found fully grown in early June. It spins a very thin cocoon, lace-like, oval, and very regular in outline, attached to the under side of a leaf. Double brooded—May-June, and again in August.

Spilosoma virginica (Fabr.).

PLATE XVI, FIG. 8. FEMALE.

Wings pure white, with a very small black dot on the fore wing at the end of the cell, and sometimes with one or two additional spots. Hind wings with two or three black spots. Sometimes all the spots are wanting. Head and thorax pure white, abdomen orange sublaterally, white along the back with a row of black spots and another row along the sides. Femora and tibiae of fore legs orange. Expanse, 35-50 mm.

Caterpillar.—Body and head varying from white to brown and even deep blackish brown. The warts each have a bunch of long, woolly hairs, of same color as the body, which readily drop off when the larva is handled. Spiracles white. Expanse, 40 mm.

Food-plants.—All kinds of low plants growing in gardens and fields.

Very common everywhere. The moth appears in May and June, and again in August. The caterpillar may be easily known by its woolly hairs varying from white to deep blackish brown. It is exceedingly abundant, and sometimes does considerable damage, especially to garden plants. When fully grown it spins an oval cocoon, composed of its hairs, interwoven with fine silk.

***Spilosoma antigone* Strecker.**

Wings pure white, fore wings more or less spotted with black, sometimes the spots are in the form of a subterminal row. Hind wings white. Head, thorax and abdomen white. Fore femora and coxæ orange. Expanse, 40-45 mm.

Caterpillar.—Head and legs black. Body along the dorsal area blackish; sides brownish, with a wine-red tinge. Along the sides above the spiracles is a row of reddish spots, one spot to each segment. The junctions of the segments on the back are dirty whitish. Warts deep black with the bunch of hairs on each jet black, stiff and bristle-like. Length, 40 mm.

Food-plants.—Various kinds of low plants.

The moth is found in May and June, and again late in July and early in August. The larva may be known by its bristly jet black hairs and row of red spots along each side. It often bores in the stems of large mushrooms. The cocoon is oval, composed of fine silk woven with the hairs of the caterpillar. Double brooded.

***Spilosoma latipennis* Stretch.**

Wings entirely pure glossy white. Head, thorax and abdomen white, above and below. Fore coxæ and femora red, very rarely yellow. Expanse, 35-40 mm.

Caterpillar.—Head yellow brown, median suture deep, mouth parts darker. Ground color of body dark slate gray, somewhat mottled; sometimes varying from light gray to slate, or to almost black, but always covered with black irrorations; pale individuals have the first segment almost colorless, whitish; under side dark slate to olive gray. Feet dirty white, especially so in pale individuals. Junctions of segments paler than ground color. Warts somewhat lighter than ground color with the hair foxy brown, somewhat darker at tip, giving them a chestnut appearance, paler on first segment and along sides. Length, 40 mm.

Food-plants.—Jack-in-the-pulpit (*Arisæma triphyllum*), Touch-me-not (*Impatiens*), *Plantago*, and other low plants, and Wild Cherry.

The moth makes its appearance during the latter part of May and in June, and the larvæ may be found fully grown in June to August. It is, as far as we are aware, single brooded, and is found in swampy meadows. The cocoon is oval and composed of fine silk and hairs of the larva, and is formed on the ground between leaves or under stones.

Hyphantria cunea (*Drury*).

PLATE XVI, FIG. 9. MALE.

Fore wings pure white, more or less covered with black spots, and when all are present they form six curved rows. Hind wings with one or more black spots. Femora of fore legs yellow.

Var. *budea* *Hübner*.—Entirely pure white without any spots whatever.

Expanse, 25-35 mm.

Caterpillar.—Head shining jet black. Dorsal region black, limited on each side by a wavy, broken, yellow line. Below the spiracles is a similar line; the space between these lines is very pale yellow and more or less sprinkled with minute black dots, giving the space a grayish appearance. The warts on the back are black, and orange in the light lateral area. Hairs from the warts white, with a few black ones. Under side black. The larva is subject to much variation, sometimes it is almost brown, with the sides but little paler, and the hairs tawny brown and whitish along the sides. Length, 30-35 mm.

Food-plants.—Oak, Chestnut, Birch, Maple, Elm, Locust, Poplar, Willow, Alder, Dogwood, Basswood, Apple, Cherry, Pear, Walnut, Hickory, and many other kinds of trees and shrubs.

The caterpillar, which is known as the "fall web worm," spins a large web over the branches of the tree, living in large colonies in the web. The eggs are laid in masses on the trunk or branch of a tree. The moth is double brooded, and makes its appearance late in April or early in May to June. The second brood appears in July and August. The caterpillars form their cocoons in masses under stones, fence rails or loose bark. The cocoon is oblong oval, and consists of loose silk and the hairs of the caterpillar. Very common everywhere.

Platarctia hyperborea (*Curtis*).

Fore wings coffee brown, with several light yellow spots along the costa and the submedian fold; sometimes these spots are connected, thus forming transverse bands. Hind wings ocher yellow with a black band beyond the middle, basal half black, with a band connected by rays with the black base, sometimes with a black discal spot. Head red; thorax brown with a light yellowish stripe on each side from the head to the end of the patagia. Abdomen black above, sides and tip ocherous. Expanse, 45-65 mm.

Exceedingly rare in this neighborhood; only a single specimen has been taken. It is more common in the northern parts of America.

Hypercompa caja var. **americana** (*Harris*).

Fore wings brown, with a transverse white band near the base, one beyond the middle and a subterminal one; the bands are angular and the outer two become joined at the middle, and the basal band is connected with the one beyond the middle by a band along the submedian fold; on the costa are also two white spots. Hind wings vary from red to yellow, with three or four large blue-black spots and one or more discal spots. Head and thorax brown; collar edged with red behind and broadly with white in front; patagia white at sides; sometimes this white line is almost absent. Abdomen red with a row of black spots along the back; under side brown. Expanse, 55-70 mm.

Caterpillar.—Body velvety black brown, with the hair on the first and fourth segments ochre brown; back with long black hairs; at the sides the hairs are also ochre brown; third row of bunches of hairs made up about equally of brown and gray hairs. Spiracles yellowish white. Feet and legs brown. Length, 45 mm.

Rare near New York City, but quite common in the northern part of the United States and Canada, and westward. The species is single brooded, and hibernates in the larval state. The cocoon is loosely woven together with hairs from the caterpillar.

The moth appears in June. The species is European, and several varieties occur in this country. Var. *opulenta* has the fore wings almost white. Var. *utahensis* has yellow hind wings, and broad white bands on the fore wings. Var. *transmontana* is more marked with white than *utahensis*, less so than *opulenta*. The form *caja* has red hind wings, and inhabits the Pacific Northwest.

Arctia virgo (*Linn.*).

PLATE XVI, FIG. 3. MALE.

Fore wings black with the veins, margins and markings pinkish buff, breaking the ground color into squares, triangles and streaks; on the outer part is a large Σ -shaped mark, the middle angle of which is connected with a transverse band which meets a longitudinal band running from the base of the wing; in the cell is also a short transverse band. Hind wings bright red with seven or nine large black spots. Head black, top pinkish cream color. Thorax black with four pinkish cream-colored stripes. Abdomen red with a black band composed of spots along the back. Under side of body black. Expanse, 40-60 mm.

Var. *citrinaria* *N. & D.*—Has the hind wings yellow instead of red.

Caterpillar.—Head dark brown, shining; legs and feet flesh-colored. Body deep rich blackish brown almost black, with a narrow dorsal dirty flesh-colored

stripe. Spiracles clear yellow. Body with six rows of prominent flesh-colored or yellow tubercles on each side of the dorsal line, each tubercle carrying a bunch of unequal stiff, black and brown hairs. Length, 43 mm.

Food-plants.—Different kinds of low plants.

Not common, inhabiting swampy meadows. The imago appears from May to August, and the larva hibernates when partly grown and completes its growth the following spring. Possibly double brooded.

***Arctia virguncula* (Kirby).**

Fore wings black heavily streaked with creamy white or yellow, and an outer Σ -shaped mark of the same color. Hind wings ochre yellow with black spots, which are sometimes more or less confluent. Expanse, 37-43 mm.

Caterpillar.—Body black with tubercles of the same color. Hairs along the spiracle region reddish brown, the rest black. Head shining black. Length, 37 mm.

Food-plants.—Various kinds of low plants.

May be readily known by its black color with yellow streaks and outer Σ -shaped mark. Rare in this vicinity, and single brooded. The imago appears in June, and the larva hibernates. It is more common in the Northern Atlantic States.

***Arctia persephone* Grote.**

Fore wings black with the streaks and Σ -shaped outer mark as in *A. virguncula*, but with two transverse bands preceding this mark. Hind wings ochre yellow with a broad outer black band occupying nearly half the wing, and one or two black discal spots. Sometimes the outer band is broken into spots or the wings are entirely black, and the discal spots are also sometimes wanting. Expanse, 40-45 mm.

Caterpillar.—Body and hairs black; warts shining black; ends of feet pale. Head with back and sides brownish, antennae and line above the mouth pinkish. Length, about 40 mm.

Food-plants.—Various low plants.

Not common in this vicinity. The form with entirely black hind wings is called variety *anna*, and the yellow winged, *persephone*. Single brooded, the moth appearing in June, and the larva ceases

feeding late in August and early in September, and begins hibernation soon afterwards. Spins a cocoon.

***Arctia parthenice* (Kirby).**

Color same as *virgo*, from which it differs by being smaller and having the transverse band before the Σ -shaped mark less angular, the median vein only narrowly lined with pale. Hind wings with a terminal row of black spots, sometimes more or less united and forming a border. A discal spot is also present, while in *virgo* there are several. Expanse, 30-40 mm.

Var. ***approximata* Stretch.**—Like the type form, but the outer transverse band is partly broken.

Quite scarce in this vicinity, but common northward. Single brooded. Larva unknown.

***Arctia rectilinea* French.**

Color and markings very similar to those of *parthenice*, but the outer transverse band is straight instead of angulated at the median vein, and the inner band is less oblique, thus making the bands more parallel than in *parthenice*. Expanse, 30-40 mm.

This is possibly not distinct from *parthenice*. It is said to be rare in the Atlantic States; we have no record of its occurrence in this vicinity.

***Arctia intermedia* Stretch.**

Similar in color and markings to *A. parthenice*, but differs in having three transverse bands on the fore wings, instead of two as in *parthenice*. It is also larger. Expanse, 45-50 mm.

Said to be found from New York to Texas, and possibly may occur in this vicinity. Probably nothing more than a variety of *parthenice*.

***Arctia arge* (Drury).**

PLATE XVI, FIG. 4. FEMALE.

Pale pinkish cream color with the pale streaks all very broad, thus breaking up the black into small spots and streaks. The outer Σ mark, the transverse band, and two abbreviated bands in the cell are present. Hind wings pale

whitish in the male, pinkish in the female, with a narrow salmon-red margin before the fringes, a marginal row of black spots, and one or more discal spots. Costa of wings heavily marked beneath with orange red. Body pale pinkish cream color. Thorax with three black stripes, abdomen with a row of black spots along the back, a row at the sides, and another row at the sides beneath. Expanse, 33-45 mm.

Caterpillar.—Head black, shining. Body blackish brown with velvety black shades between the tubercles. Along the back is a broad pinkish white stripe, and one on each side of the subdorsum. Beneath the spiracles is a zigzag stripe, and between the tubercles on each side is a spot of the same color. Each tubercle has a bunch of brown hairs, those along the extreme sides with white hairs. Abdominal legs pale flesh-color. Thoracic feet black. Length, 43 mm.

Food-plants.—Corn, *Chenopodium*, *Plantago*, and various kinds of low plants.

Rather common, especially in open fields. Double brooded, June to August. The caterpillar hibernates and spins a loose cocoon.

Arctia michabo Grote.

Fore wings with the veins and margins pale pinkish, the streak along the median vein very broad. Outer Σ -shaped mark very broad, as is also the transverse band; two abbreviated bands in the cell. Hind wings salmon red with a terminal row of black spots and two or more discal spots. Under side of all the wings with the markings from above repeated, but the pale marks on the fore wings are salmon pink. Head and thorax pale pinkish; the latter with three black stripes. Abdomen salmon pink above and below, with a row of black spots along the back, a row along the sides, and another row on each side beneath. Expanse, 45 mm.

Found from Canada to Florida, and westward to Nebraska, and undoubtedly also found in this neighborhood. It looks like *arge*, but the black marks on the fore wings are twice as broad, and the light parts pinker. Hind wings above and below salmon pink, as are also the fore wings beneath, and with black spots. The larva is not known.

Arctia phyllira (Drury).

Fore wings deep brown black with a distinct cream-colored outer Σ -shaped mark and two straight, parallel, oblique bands from the costa to the straight broad band along the median vein; sometimes the inner band is abbreviated. Hind wings red with an outer row of black spots. Expanse, 32-40 mm.

Var. **figurata** *Drury*.—Fore wings brown black, with the outer Σ -shaped mark wanting, and the hind wings red with a broad brown black border and discal spot.

Var. **celea** *Saunders*.—Fore wings as in *phyllira*. Hind wings light brown, with two irregular yellow spots about the middle of the wing, and a stripe of the same color extending from the base along the submedian vein to within a third of the hind margin; inner margin yellow.

Var. **excelsa** *Neum.*—Hind wings black with a large bright red discal spot of irregular shape.

Very rare in this vicinity, but more common in the Southern States. Double brooded, the first brood appearing in May and the second in July. The caterpillar is said to be jet black. The figure given by Abbot and Smith has a row of yellow spots along the back and sides.

Arctia nais (*Drury*).

PLATE XVI, FIGS. 1 AND 2. MALE AND FEMALE.

Fore wings black with a broad pale ochreous costal stripe, the costal edge black and connected at the end with a short oblique transverse band, which unites the broad stripe along the middle of the wing with the outer Σ -shaped mark. The central band sends out a branch from the middle to the hind angle, connecting with the lower limb of the Σ -shaped mark, leaving a small triangular black space at the angle. Often the outer mark is broken or is obsolete. Inner margin of wing ochreous. Hind wings ochreous, sometimes pink with an outer black border sometimes more or less broken into spots. Abdomen ochreous above with a black stripe; under side wholly black. Expanse, 25-35 mm.

Caterpillar.—Head black, shining. Body black with a flesh-colored or reddish dorsal stripe. Warts with hairs, black. Length. 25-28 mm.

Food-plants.—Various kinds of low plants.

Common in open fields and vegetable gardens. Double brooded. May-August.

Arctia vittata (*Fabr.*).

Allied to *nais*, but the hind wings are usually pink. Markings on fore wings as in *nais*, but the costa lacks the black edge, and in the female the outer Σ -shaped mark is usually wanting; the hind wings have a very broad black border, which is sometimes broken into spots, and with a distinct discal spot,

when not confluent with the border. Stripe on abdomen of male very broad; in the female the abdomen from the fourth to last segment is wholly black. Expanse, 30-42 mm.

Caterpillar.—More robust than *nais* and *vittata*. Black, with tubercles also black, from which arise tufts of black hairs. Length, about 25 mm. or more.

Food-plants.—Various kinds of low plants.

Common in open fields. Double brooded; May to August. Sometimes partly three brooded. The caterpillar hibernates and spins a cocoon in early spring.

Arctia phalerata Harris.

Allied to *vittata*, but less robust, and as in this species the pale costal stripe touches the costa, and lacks the black edge which is present in *nais*. The markings are similar, but the outer Σ -shaped mark is nearly always present, being very rarely absent. Hind wings of male usually buff pink or buff, with pink inner margin; costa black, outer row of spots usually small and often absent. Abdomen buff or pink in both sexes, with a black stripe along the back as in *nais*, and the female has never the last four segments wholly black, as in *vittata*. Hind wings of female rosy pink, with larger spots, which are sometimes confluent. Expanse, 30-37 mm.

Caterpillar.—Head and body black; tubercles black with black hairs along the back and foxy brown hairs along the sides. Length, 25-28 mm.

Common in open fields and double brooded. The caterpillar hibernates.

Notolophus definita (Packard).

Dark gray, more or less heavily shaded with black between the transverse lines, and sometimes clouded with dark ochereous. The black shades are sometimes in form of transverse bands. White spot near hind angle more or less distinct. Hind wings uniform fuscous. Expanse, 25-35 mm. The female is wingless.

Caterpillar.—Head yellow. Body pale yellow, almost colorless, dorsal band, replaced on joints,—on joint 1 by the yellow cervical shield, becoming narrow and greenish on joints 2 and 3, widening and enclosing the yellow dorsal brush-like tufts on the fourth to seventh segments, and narrowing on the eighth to eleventh segments. A narrow subdorsal and stigmatal, similarly colored lines. Sometimes these bands are more or less black, gray or brown, and there is a velvety black spot between the dorsal tufts on segments 5, 6 and 7. Warts all yellow. Pencils on first segment long, plumed, black; that on the eleventh seg-

ment light brown with a few black plumes. Other hairs long, thin and white. Length, 40 mm.

Food-plants.—Willow, Oak, Linden, Witch-hazel, Maple, etc.

Very rare in this vicinity, but quite common in certain parts of Connecticut and New York State (Catskills). It is double brooded, May to September. The cocoon is pale yellow, and in structure it is like that of *N. leucostigma*. The pupa is pale yellow, with thin silky hairs, and the larva does not differ structurally from that of *leucostigma*, but differs markedly from it in color, especially by the yellow head, cervical shield and tufts.

Notolophus leucostigma (*A. & S.*)

PLATE XVII, FIG. 16. MALE.

Fore wings with basal and outer third mouse gray; middle third suffused with gray, limited outwardly by a narrow, transverse dark line; a more or less distinct reniform spot in the cell. Through the outer third is a narrow, wavy, grayish line; before the hind angle a distinct white spot, and on the costa an irregular white spot. Across the basal third is a wavy grayish line, sometimes almost wanting. Hind wings uniform mouse gray. Expanse, 25-35 mm. The female is wingless.

Caterpillar.—Head and cervical shield bright coral red. Along the back is a velvety-black stripe broken on the 4th-7th segments by the four bunches of white brush-like tufts. Body yellow, sometimes grayish or blackish along the side. On each side of the first segment is a long black pencil, and one on the top of the eleventh segment. Tubercles yellow, with the hairs white. Length, 40 mm.

Food-plants.—Oak, Elm, Horse-chestnut, Beech, Chestnut, Maple, Willow, Hickory, Pear, Apple, Plum, Quince, Larch, Spruce, and a variety of other plants.

Exceedingly common everywhere, but especially in city parks and on the shade trees lining the streets. It sometimes does considerable injury to the trees by stripping them of all their leaves. It is double brooded, from May to September.

Notolophus antiqua (*Linn.*)

Fore wings rusty brown with darker transverse lines and shades, and a bright white spot before the hind angle. Hind wings bright, uniform rusty brown. Expanse, 25-35 mm. Female wingless.

Caterpillar.—Head black, shining. Body deep smoky black with a velvety black stripe along the back, which is broken on the fourth-seventh segments by four bunches of buff-colored brush-like bunches of hairs. Pencils on first and eleventh segments black; cervical shield and tubercles red. Hairs white along sides, brownish on the back. Along each side, below the spiracles, is a broken yellow stripe, and on the last three segments are two yellow stripes on each side of the velvety black dorsal band. Length, 25–30 mm.

Food-plants.—Pear, Apple, Rose and other plants of the family Rosaceæ; also various other kinds of deciduous trees.

This European species is found in Canada and Northern United States, from the Atlantic to the Pacific. It is found as far south as Albany, N. Y., and possibly may also occur in this vicinity. The moth may be readily known by its rusty brown color.

Olene achatina (A. & S.).

Fore wings dark brownish gray, with a pale shade between the two irregular black transverse lines; sometimes the wings are more or less washed over with a rusty brown shade between the lines, and have an ill-defined dark terminal line. Hind wings uniform brown gray, showing traces of a median band and discal spot. Expanse, male, 35 mm.; female, 45–50 mm.

Var. *parallela* G. & R. (Plate XVII, Fig. 18).—Like the preceding, but with a black dash along the median vein to the outer transverse line.

Caterpillar.—Head shining, dark brown, rather hairy, mouth parts lighter. Body dark slate gray, almost black, velvety; stigmal region light yellowish gray, almost the color of the vestiture; this color spreads in fine lines across the segments. Spiracles white. Under side black; legs whitish. The hair of the larva is mouse gray, feathered and soft. On the second and third, but far more so on the fourth, fifth, sixth and seventh segments, the dorsal warts are ridge-like, enlarged but low, with the hair tufts arising from them covering the entire dorsal region. On the sides, above the spiracles, the warts on the first segment are without feathery hairs, the small warts bearing some spreading hairs; on all the other segments these warts are provided with bushy, rounded tufts of feathery hairs. The warts below the spiracles have longer, bushy, fringe-like, spreading hairs. On each side of the first segment is a black pencil, and there is a similar one on top of the last segment. The black dense tuft on the dorsal warts on the fourth segment slightly longer than the surrounding hairs; dorsal tufts on the fifth, sixth and seventh segments mixed with dark hairs. On the eleventh segment the rounded black tuft arising from the two warts is still higher. The vestiture on the ninth and tenth segments is more scant and the larva skin always visible. The amber-colored, cylindrical excrescences between the dorsal

warts are scarcely one-third the length of the adjoining hair. Length, 30-34 mm.

Food-plants.—Plum, Pear, Oak, Hickory, Chestnut, Cherry, etc.

Not common, and single brooded. The moth may be found in July; the larva stops feeding when about half grown, and winters over. Rarely part of the brood become fully fed and emerge during the same season. They may be found again in early spring when the leaves are just coming forth. The caterpillar, when at rest, bends the head down, and as the vestiture on the next segment is richest and longest, it presents an almost humped appearance.

***Olene leucophæa* (A. ♂ S.).**

Fore wings with two irregular transverse black lines. Space between the lines white, powdered with black scales and shaded with ocherous. Basal area ocherous, shaded with dark brown; terminal area dark brown and ocherous in the male; female has a series of dark dashes on an ocherous or brown ground, sometimes mixed with whitish. Expanse, male, 35 mm.; female, 45-50 mm.

Caterpillar.—Head black, whitish above the mouth. Body pale whitish with a yellowish tinge, shaded and marked diffusely with black; a dorsal and stigmatal band indicated. On joints 4, 5, 6, 7 and 11, the warts have large, square, brown tufts, mixed at the sides with white, plumed hairs, the tuft on joint 11 black and contrasting with the others. Hairs along the sides dirty white mixed with a few black ones. First joint with a long black pencil on each side, and a similar one on the last segment; segments 9 and 10 with a whitish retractile tubercle. Length, about 30 mm.

Food-plants.—Hickory, Oak.

Not common, and single brooded. The larva hibernates when nearly full grown, and becomes fully fed the following spring. The moth is found in July.

***Olene plagiata* (Walker).**

Fore wings dark gray, irrorated with black, pulverulent scales, obscuring the markings, especially in the female; two transverse, dark, wavy lines, between which is a large whitish area on the costa. Outer part of wing with black dashes. Hind wings uniform fuscous. Expanse, male, 30-35 mm.; female, 40-45 mm.

[September, 1898.]

Caterpillar.—Body dark gray, with a bunch of evenly cut hairs on top of joints 4, 5, 6 and 7, mouse colored, sprinkled with white; on each side of the first and last segments, and on top of eleventh segment is a pencil of long black hairs which are knobbed at the outer end; on top of segments 9 and 10 is a small reddish retractile tubercle; hairs on sides of body quite long, mouse colored. Head shining black. Length, 30 mm.

Food-plant.—Oak.

Quite scarce, and single brooded. The larva hibernates, and may be found in May to July the following year. The moth comes forth in July and August.

***Olene cinnamomea* (G. & R.).**

Fore wings with basal and outer third dull cinnamon brown, median space brownish gray, limited on each side by a narrow undulating, brown transverse line. Reniform spot ill-defined, with the broken outline black. Across the outer third is a transverse whitish shade. Body dull cinnamon brown. Expanse of male, 35 mm.; of female, 45 mm.

As far as we are aware, this insect, like its congeners, is single brooded, the moth appearing during the latter part of July and early in August. The caterpillar hibernates before it is fully grown, and may be found again the following spring. It spins a loose cocoon, mixed with its hairs.

***Porthetria dispar* (Linn.).**

Male.—Dark smoky brown. Fore wings crossed by four dentate, dark lines, one on basal third, one on the middle, and two subterminal ones. Two discal dots, the outer one lunate. Fringe spotted with dusky. Expanse, 25-37 mm.

Female.—Much larger and heavier than the male. White, with tip of abdomen brown. Fore wings with four transverse dentate lines, placed as in the male, but heavier on the costa. Discal spots also present. Antennæ black. Expanse, 45-55 mm.

Caterpillar.—Head dull yellowish sprinkled with black or brown, and with two vertical stripes in front. Body dull yellow, thickly sprinkled with black dots and irrorations, giving a general dark gray appearance, and leaving a narrow dorsal line of another color. The tubercles on the back of the first, fourth or fifth segments are bluish, and those on the remaining segments red. Tubercles along sides reddish. Length, about 50 mm.

This is the well-known Gipsy Moth, which is doing so much damage in Massachusetts. It is not found in this neighborhood, but has been inserted here on account of its interest. Possibly the pest may increase its range of distribution so as to reach this neighborhood.

Eudeilinia herminiata (*Guéné*).

Pure white with two transverse bands on both wings, composed of indistinct smoky spots on the veins, the outer band broadly sinuate. Two discal spots on the under side of both wings. Expanse, 28 mm.

Caterpillar.—Head bilobed, rounded, whitish, yellow in front below the apex of each lobe; two transverse bands connected by a strong band on each side of the head behind the ocelli. Body flattened, smooth, translucent whitish with a green shade dorsally; cervical shield hemispherical, whitish, shining, a gray shade at the lateral corners. Above and before the spiracle on the second segment is a shining black elliptical spot, bearing two setæ. Thoracic feet small, colorless. Abdominal legs on segments six to nine. No anal legs; the fleshy plate is produced into a short conic process.

Food-plant.—Dogwood.

Quite rare in this vicinity, but commonly found in the Adirondacks and northward. The pupa is formed between leaves on the ground, with a few silken threads. The larva when mature becomes suffused with reddish pink on the back. It lives singly, spinning two leaves together, within which it remains concealed.

Oreta rosea (*Walker*).

PLATE XIX, FIG. 14. FEMALE.

Fore wings largely pale brownish rose; outer margin narrowly brownish rose, with a narrow lemon yellow space between. The outer border sometimes darker, with two black spots near the hind angle and one at the apex. Across the wings are also fine brownish rose striæ, more or less distinct. Hind wings with basal half brownish rose, outer half yellow, with a brownish rose spot at the apex, with fine striæ across the wing. Expanse, 24–28 mm.

Var. *marginata* *Packard*.—The basal parts of the wings in this variety are almost yellow, with fine striæ, and have the outer border brownish rose.

Caterpillar.—Head dark rust red, small, narrow, the vertex ending in two high conical lobes, each bearing a large rounded, tuberculated knob; surface densely covered with coarse, prominent, piliferous warts. Body olivaceous

brown, pale dorsally; a triangular dark patch on each side of the body, commencing on the fourth segment and bordered above the feet with pink. On the middle of the back of the third segment is a large, fleshy, round, knob-like projection, covered with minute piliferous warts. Tenth segment conical, merging into a remarkably developed suranal plate, which is drawn out into a long thick appendage, blunt at the end, and with two constrictions, dividing it into three segments, and covered with coarse spinules. Length, 21 mm.

Food-plant.—*Viburnum*.

Not common, and easily recognized by its yellow and brownish rose markings and excavate wings. The caterpillar is found in the beginning of July, and again in September, on the leaves and stems of its food-plant. In resting it elevates the terminal segment. When fully developed it forms a light close web cocoon, of pale brown silk, between leaves. The moth appears in May–June, and again in July–August.

***Oreta irrorata* (Packard).**

Wings uniform rosy brown with a darker transverse line on the fore wings from the apex to the inner margin before the angle; across the basal third is also a faint trace of an irregularly curved transverse line. Hind wings with two very faint transverse lines. Across the wings are also fine irrorations. Body uniform rosy brown. Expanse, 24–28 mm.

This species is supposed to be the second brood of *Oreta rosea*, and the larva is said to be exactly the same in markings, shape and habits. It feeds on birch and *Viburnum*.

***Platypteryx arcuata* (Walker).**

PLATE XIX, FIG. 12. MALE.

Fore wings pale ochreous or straw color with four narrow, undulating brown transverse lines, and a conspicuous rusty brown stripe running from the apex to the outer third of the inner margin; sometimes shaded with dark between the lines; apex purplish. Two small blackish dots in the cell. Hind wings with the lines running from the inner margin to about the middle of the wings. Body uniform straw color. Expanse, 25–35 mm.

Var. **genicula** Grote.—Wings darker than in *arcuata*, with the markings less distinct. The color is almost uniform ochreous.

Caterpillar.—Head small, yellowish green, with two curved, transverse brown bands. Body light green, red along the dorsal region, mottled with yellow; along the subdorsum is a deep brown, broken stripe, which is sometimes obsolete or wanting. Second and third segments each with two prominent yellow tubercles, tipped with red, and at the base on the outer side of each is a small black wart. On the fifth segment are two similar prominent tubercles. Along the back and sides are yellow piliferous warts. Last segment elongated into a pointed spine, with short bristles. Under side of body sordid white. Legs green. Length, 23 mm.

Food-plant.—Birch.

Double brooded. The first brood produces the form *genicula*, and the second *arcuata*. The larva lives singly on the upper surface of a leaf, under a silken web, slightly drawing the leaf together. Spins a cocoon between leaves. The moth appears in the first week of June and again late in July. Rather common.

Falcaria bilineata (*Packard*).

PLATE XIX, FIG. 10. MALE.

Fore wings pale ochereous, covered with fine transverse striæ and crossed by two parallel brown stripes, which are almost straight. On the disc is a small brown dot. Hind wings very pale, almost whitish, and without striæ. Expanse, 25–30 mm.

Var. *levis* *Hudson*.—This form lacks the transverse striæ.

Caterpillar.—Head rather square, higher than the first segment, and distinctly bilobed. Pale, whitish, thickly mottled with pale reddish brown, the mottling cut into several areas by narrow lines of the ground color, forming a distinct blotch below the vertex of each lobe. Body marked in an undefined, creamy white, varied with vinous brown, and traces of broken dark brown dorsal and subdorsal lines; sides of joint 5 and abdominal legs yellowish white; the dark shades predominate on joints 6 and 7. The markings suggest oblique lateral lines. The general appearance varies in different individuals from creamy yellowish with slight marks to dark rusty brown. Tubercles distinct, button-like, with short pale setæ; on the second and third segments are two pairs of tubercles, which form a partly consolidated process producing a short horn-like structure. Anal legs absent; a short upturned rounded anal process. Length, 22 mm.

Food-plant.—White Birch.

The moths come forth from hibernating pupæ early in June, and there are two broods annually. The larva when in its last

stage of growth usually rests on a twig or branch. In its usual position the head and tail are held up at an angle of 45 degrees, the larva being supported on its abdominal legs. When fully developed it forms a slight cocoon of yellow silk between leaves, and the pupa is covered with white bloom.

***Euclea delphinii* (Boisd.).**

Deep velvety, deep reddish brown, with a triangular green patch near the base beneath the median vein, separated from a rusty brown patch by a silvery white line; before the apex is also a small green patch, with sometimes one or two more smaller ones. In the cell is a deep black dot. Hind wings uniform brown. Sometimes the discal dot on the fore wings is absent. Body uniform brown. Expanse, 17-22 mm.

Var. **querceti** *H.-S.*—The green patch at the base on the fore wings sends out a fine green line over the ferruginous patch.

Var. **interjecta** *Dyar.*—In this form the basal green patch is connected with the apical spots by a row of contiguous dots.

Var. **viridiclava** *Walk.* (Plate XVII, Fig. 3.)—The green basal mark is fused into a continuous band, which is deeply notched beneath and irregularly concave above.

Var. **elliottii** *Pears.*—Like *viridiclava*, but the green band is much broader, the upper part straight and contains the brown discal spot.

Var. **pænulata** *Clem.*—Similar to *elliottii*, but the green field is larger, and lacks the brown discal spot.

Caterpillar.—Elliptical, dorsal region flat, bordered on each side by a slight ridge on which are placed a row of ten spiny horns, the three at each end being longer and stouter. Sides sloping outward and having a series of rough pit-like depressions in which are placed the spiracles; below these there is another ridge, on which are placed nine spined horns, projecting laterally, and stouter than the upper row. Flesh-colored, horns and ridges bright red shading to pinkish, black lines present, waved, forming irregular areas about the glandular dots along the sides and back; sometimes sordid purplish, or with sides green; the black lines shaded, horns and ridge broadly bright ferruginous, broken by dark quadrate spots; sometimes green, with black lines faint; horns and ridge yellow, broken by black spots, or with horns and ridge red broken by brown spots. Length, 23 mm.

Food-plants.—Oak, Chestnut, Beech, Sour-gum, Blackberry, Cherry, *Myrica*, *Andromeda*, etc.

A common species and very variable in marking of both moths and caterpillars. Single brooded. Moth in June and July, and mature caterpillars in August and September. The cocoon is formed on the ground and is oval, very hard and brittle; the caterpillar changes to a pupa the following year.

***Euclea indetermina* (Boisd.).**

PLATE XVII, FIG. 1. FEMALE.

Fore wings largely bright green, with a subtriangular, wood-brown space on the costa at the base and a broad outer border of the same color. Hind wings ocherous. Thorax above bright green, abdomen ocherous. Under side of wings yellowish ocherous, body darker. Expanse, 25-30 mm.

Caterpillar.—Elongate, dorsal space broad, flattened, narrowing slightly at the ends and curving down. Sides nearly perpendicular, lateral and subventral areas almost continuous. On segments 2, 3, 4, 7, 10 and 11 are six well-developed horns on each side, armed with strongly stinging spines; intervening segments with short bunches of spines, and a row of spines along each of the sides. Body bright scarlet red, with yellow longitudinal bands; dorsal region with stripes of bright purple and white; lateral area with two pairs of purplish lines in the yellow bands, and a pair in the yellow of the subventral area. Horns scarlet red with yellow spines; bunches of spines yellow. Sometimes the body is bright sulphur yellow instead of scarlet. Length, 20 mm.

Food-plants.—Apple, Cherry, Rose, Blackberry, Oak, Hickory, *Myrica*, etc.

Not common everywhere, but quite common in certain places. The moth appears in July and mature larvæ may be found in August and September; they may be known by their bright scarlet color and long horns with yellow spines. Cocoon like that of the preceding species.

***Monoleuca semifascia* (Walker).**

PLATE XVII, FIG. 5. MALE.

Fore wings uniform rusty brown with an irregularly waved white band running from the middle of the inner margin upwards to the middle of the wing. Hind wings somewhat paler. Body brown. Expanse, 19-22 mm.

Very rare in this vicinity, but more common in the Southern States. The caterpillar is unknown.

Sisyrosea textula (*H.-S.*).

PLATE XVII, FIG. 9. MALE.

Fore wings pale cinnamon brown with a paler shade of a silky lustre along the costal region, and running obliquely across the wing, forming a triangular space between this and the apical pale shade. Across the wings are also many wavy creases, formed of raised scales. Hind wings pale cinnamon brown, as are also the under side and the body. Female paler in color, and the lighter shade is hardly or not at all discernible. It is also larger. Expanse, 15-22 mm.

Caterpillar.—Form very much flattened, dorsal space narrow, lateral space broad and very oblique. On each of the dorsal ridges is a row of very short and flattened horns. Lateral horns large, flattened, armed with long spines and looking like the antennæ of a Bombycid. The first three horns are shorter than the others. Body green, dorsal ridges yellow. First three spines along sides orange, and a small mark of the same color on the dorsum of the ninth and eleventh segments. Head hidden by the overlapping of the other segments, smooth, pitchy. Length, about 15 mm. ; width, 10 mm. (including spines).

Food-plants.—Oak, Hickory, Cherry, Chestnut, Elm, Beech, Maple, Linden, Hornbeam, etc.

Single brooded. The moth emerges in July and lays her eggs singly. The flounder-shaped caterpillars live on the under side of the leaves and spin their cocoons on the ground late in August and in September. The larva hibernates in the cocoon, forming a chrysalis the following spring.

Natada nasoni (*Grote*).

Fore wings pale brown, sparsely sprinkled with black. An oblique brown line crosses the wings from the apical third of the costa to the basal third of the inner margin, and a second subterminal dark brown line crosses the wings transversely. Both lines are faintly pale, bordered outwardly. Thorax slightly brighter reddish brown. Expanse, 25-32 mm.

Caterpillar.—Body bright green, elongate, square, high in front, tapering somewhat towards the end of the body; dorsal space wide, subdorsal ridge prominent, lateral space high and sloping; subventral space narrow; a series of red warts in the subdorsal ridge more prominent on the third and fourth segments, with black setæ. Anal segment with two rather long, pointed appendages, spined. A series of minute warts along the subventral ridge. Length, 16 mm.

Food-plant.—Oak, Chestnut, Beech, etc.

Quite rare, but somewhat common locally. It is quite common near Lake Ronkonkoma, Long Island.

Phobetron pithecium (*A. & S.*).

PLATE XVII, FIGS. 7 AND 8. MALE AND FEMALE.

Male.—Fore wings transparent, with very few scales, and the margins dull brown black; fringes on outer margin with whitish spots. A blackish discal spot also present. Hind wings transparent with the costal and inner border broadly black. Head black, face, breast, middle tibiæ pale. Thorax above black, tufted with deep blackish brown; abdomen black, anal segment beneath straw yellow. Expanse, 15–20 mm.

Female.—Very different in color and markings. Fore wings ocherous, with dense dark blackish brown shades and three transverse black lines, the outer one curved outwardly, scalloped, with the indentations pointing inwardly. A rusty brown spot in the disc. Fringes deep brown, cut by whitish spots. Hind wings blackish, with narrow ocherous outer margin. Body deep brown. Face, thorax beneath, middle tibia and anal tuft ocherous. Expanse, 19–25 mm.

Caterpillar.—Rounded, quadrangular, dorsal space broad, even, flat; lateral space broad, subventral space broad and continuous with the lateral space. Ridges absent. Warts on subdorsum attached by broad bases and produced laterally into fleshy appendages of variable length. Lateral row of warts forms small, rounded, button-like structures. The rows of warts are composed of a soft spongy tissue and readily become detached. On each side are also four very long, fleshy appendages. Warts and appendages all covered with feathery, brown hairs, giving the larva a woolly appearance and a curious shape. Length, 20 mm.

Food-plants.—Plum, Cherry, Apple, Oak, Chestnut, Hazel, Buttonbush (*Cephalanthus*), Dogwood, Ash, Sassafras, etc.

Quite rare and local. The moth appears in July. The caterpillar mimics a dead dry leaf, and with its curious shape and appendages assumes a very striking and remarkable appearance. The cocoon is oval, hard, and the tubercles of the caterpillar remain on the outside of the structure, giving it a characteristic appearance. Single brooded.

Adoneta spinuloides (*H.-S.*).

PLATE XVII, FIG. 4. FEMALE.

Fore wings chocolate brown with a black discal patch or spot, a short dentate white line before the apex and one on the inner margin; these two lines are

more or less connected by a light grayish brown shade and a curved row of minute black dots. Fringes grayish brown with a row of black dots. Head and body cinnamon brown; collar grayish brown. Hind wings paler brown, fringes edged with black at the hind angle. Expanse, 13-18 mm.

Caterpillar.—Elongate, sides slightly rounded. Dorsal space rather broad, narrowing at each end. Lateral space bright green, dorsal space with a narrowing and expanding bright purple mark, sometimes more or less broken, and edged with yellow; sometimes edged with crimson inside the yellow and with a red lateral band. Tubercles on segments 2, 3, 4, 7, 11 and 12 longest, red; the rest yellow, or sometimes red. Length, 10 mm.

Food-plants.—Cherry, Plum, Juneberry, Birch, Oak, Chestnut, Linden, Willow, Witch-hazel, Beech, Sour-gum, *Myrica*, etc.

The moth emerges during July, and the caterpillar matures during the latter part of August and in September. Common and single brooded.

Parasa chloris (H.-S.).

PLATE XVII, FIG. 2. MALE.

Fore wings largely bright green with the terminal space and a subtriangular space at the base on the costa brown. Hind wings ocherous, with the outer third brown. Head and thorax above green. Abdomen brown. Expanse, 18-24 mm.

Caterpillar.—Dorsal space broad, and almost of uniform width. The dorsum rises abruptly from the first to the fifth segment, then slopes backward, and terminates in a tail-like process at the last segment. Lateral space broad, nearly perpendicular and continuous with the subventral space. Subdorsal ridge well indicated. Horns reduced to small spinose buttons. Color fleshy brown, with many wavy salmon-colored lines; tubercles with whitish spines. Subventral edge broadly pink, edged above by a deep red line. Length, 11-20 mm.

Food-plants.—Hickory, Oak, Chestnut, Wild-cherry, *Myrica*, etc.

Rather common and single brooded. The moth appears in July and the caterpillar in August and September. They rest on the under side of the leaves, feeding singly.

Sibine stimulea (Clemens).

PLATE XVII, FIG. 6. FEMALE.

Fore wings deep velvety seal brown with a silky lustre if held in certain lights. Before the apex are two or three minute white dots and sometimes one

below the median vein near the base. Hind wings and abdomen chocolate brown; thorax like the fore wings. Expanse, 22-34 mm.

Caterpillar.—Velvety brown on the first four and last three segments and extreme sides, with a large, square, saddle-like green patch, edged with white, on the rest of the body above, containing a conspicuous, round velvety brown spot in the middle of the back. On the fourth and tenth segments are two long stout horns with stinging spines, and along the sides is a row of bunches beset with bristly spines, and around the last segment are four thick bunches of hair-like spines. Between the anterior and posterior pairs of horns is a small yellow spot, and two larger ones on the eleventh segment. Length, 23 mm.

Food-plants.—Oak, Sweet-gum, Viburnum, Rose, Apple, Cherry, Raspberry, Blackberry, Juneberry, Corn, Asters, Sumac, Catbriar (*Smilax*), Huckleberry, Spice-bush, etc.

Common everywhere and single brooded. The moth appears in July, and the larvæ may be found fully grown in September. The eggs are laid in masses on the upper side of a leaf, and the larvæ live socially, but scatter over the plant when in the last stage.

Apoda scapha (Harris).

PLATE XVII, FIG. II. FEMALE.

Fore wings pale wood brown, with a very large subtriangular reddish brown patch on the costal region, which covers a large portion of the wing and is narrowly connected with the base on the costa, thus forming a deep notch beneath. The patch is separated from the rest of the wing by a narrow silvery white line which expands in the notch at the base of the wing. A small black discal spot present. Hind wings and body chocolate brown. Expanse, 22-32 mm.

Caterpillar.—Form elliptical, dorsal space very broad and terminating in a point on the last segment. Subdorsal ridges prominent, sides almost perpendicular, giving the larva a boat-shaped appearance. Color bright green, variously spotted with yellow and brown, especially on the dorsum, which is sometimes yellow. Length, 12-18 mm.

Food-plants.—Oak, Chestnut, Cherry, Hickory, Sweet-gum, Linden, Hornbeam, Juneberry, Apple, Walnut, *Myrica*, Huckleberry, etc.

The moths fly in July and the larvæ mature in August and September. The eggs are laid singly, and the larvæ often live on the upper side of the leaves.

***Apoda biguttata* (Packard).**

PLATE XVII, FIG. 12. FEMALE.

Fore wings pale wood brown with an oblique, paler transverse line from the middle of the costa to the basal third of the inner margin, and a short line from a little before the apex to the middle of the outer margin; beyond this line the apex is rusty brown, as well as a triangular spot before the hind angle, this spot surrounded by a light shade. Fringes pale wood brown, as are also the hind wings. Body, and wings beneath, wholly pale wood brown. Expanse, 20-25 mm.

Caterpillar.—Elliptical, dorsal space broad, narrowing slightly towards the extremities; last segment broadly quadrate. Lateral area oblique. Skin uniformly covered with granules, frosted. Subdorsal ridge not prominent, formed only by the change in slope between the back and sides. Pale green with a broad pale yellow subdorsal, edged with dark green above and less distinctly so below. Subventral line obscure whitish. Length, 10-12 mm.

Food-plant.—Oak.

Quite rare and local. The moth emerges during the latter part of June and early in July. The species is single brooded, lays its eggs singly, and the larvæ mature from the middle of August into September.

***Apoda y-inversa* (Packard).**

PLATE XVII, FIG. 13. FEMALE.

Fore wings light ochereous, with an oblique brown line from the middle of the costa to the basal third of the inner margin, and another line from the apical third of the costa to above the hind angle. From the middle of this last line is another line running to the inner margin before the angle. Hind wings pale. Body entirely ochereous, as are also the wings beneath. Expanse, 20-27 mm.

Caterpillar.—Same as that of *S. biguttata*, in structure and color, but differs from it by the presence of a transverse yellow line on the second segment. Length, 10-15 mm.

Food-plant.—Oak.

Rare and single brooded. The moth appears in July and larvæ mature in August and September.

Apoda rectilinea (*G. & R.*).

Fore wings with a very broad inverted V-shaped mark across the wings, bordered narrowly with white and blackish. This mark is grayish brown, while the basal part and apex is ochereous brown. Hind wings testaceous. Expanse, 20-25 mm.

This species is very rare in this neighborhood, but is more common in the Southern States. The earlier stages are not known.

Lithacodes fasciola (*H.-S.*).

PLATE XVII, FIG. 10. FEMALE.

Fore wings ochereous brown with a dentate white band running across the middle, followed by a blackish shade. From the white band on the costa to the hind angle is a curved black line. Hind wings blackish or pale testaceous. Expanse, 15-20 mm.

Var. *laticlavata* *Clem.*—Like *fasciola*, but wants the blackish shade behind the white transverse band on the fore wings, thus giving it a much paler appearance. The ground color is also paler.

Caterpillar.—Elliptical, posterior end quadrate. Dorsal space broad, flat; lateral space broad, oblique. Subdorsal ridge slight, smooth, yellowish green, subdorsal and lateral lines yellow, the latter broken. Depressed spaces pale yellow, with green centres. Length, 7-13 mm.

Food-plants.—Cherry, Apple, Birch, Dogwood, Chestnut, Oak, Linden, Maple, Beech, Hickory, Hornbeam, Huckleberry, *Myrica*, etc.

Generally distributed and not rare in this neighborhood. The moth lays her eggs in July and the larvæ mature in August and September. Single brooded.

Tortricidia flexuosa (*H.-S.*).

Fore wings deep ochereous with a narrow dark brown line from the middle of the inner margin running upwards to nearly the costa, forming a rounded loop, then running downwards and curving inwardly before reaching the inner margin on the outer third. This loop is more or less distinct or entirely wanting. Expanse, 12-25 mm.

Var. *cæsonia* *Grote.*—In this form the space between the loop is more or less filled with dark brown.

Caterpillar.—Elliptical; dorsal space of almost uniform width, scarcely narrowing at the ends. Lateral space broad and oblique. Dorsal ridge very slight. Color pale yellowish green, clearer green at the sides. Subdorsal line yellow, as are also all the depressed spaces in the bottom, the largest with glandular green centres. On the anterior edge of the second joint is a red mark, widened along the edge and produced backwards more or less in the dorsal space. The central dorsal red mark is very variable, sometimes absent or represented by a yellow bridge, slightly tinted with red. The usual form is a rounded cross; sometimes enlarged to a hexagon or extended in a dorsal band the whole length. The color is crimson, marked with purplish brown or blackish on the ridges. Length, 6–10 mm.

Food-plants.—Cherry, Plum, Apple, Oak, Chestnut, Hickory.

Not rare and local in this vicinity. The moth appears during the latter part of June and early in July. Single brooded.

***Tortricidia pallida* (H.-S.).**

Similar to *T. flexuosa*, but pale ochereous instead of dark ochereous, with the hind wings pale straw yellow and slightly darker outwardly. Fore wings uniform, pale ochereous without any markings whatever, with a silken lustre. The dark shade is also always wanting. Expanse, 12–20 mm.

Var. **flavula** (H.-S.).—Like *pallida*, but a loop on the fore wings, otherwise the same.

Caterpillar.—Oval, elliptical. Dorsal space rather broad, subdorsal ridge rounded, lateral space gently sloping, giving the larva a flattened appearance; lateral ridge acute, subventral space narrow. Head whitish green, mouth parts black. Body bright green or yellowish green, second segment edged in front with bright red, and continuous with the narrow red dorsal band; on the second and third segments, this band connects with the very large arrowhead-shaped mark on the back. This patch begins on the fourth segment, then suddenly expands, being broadest at the sides of the sixth, seventh and eighth segments; at the end of the eighth segment it abruptly and acutely contracts and runs to the end of the body. Purplish red, scarlet in the center, bordered with crimson and yellow outside; depressed spaces yellowish. Length, 10 mm.

Food-plants.—Willow, Oak, Sycamore, *Myrica*, etc.

Common locally. The moth appears in June, and fully developed larvæ may be found in August and early in September. Single brooded.

***Tortricidia testacea* Packard.**

Fore wings pale ocherous with the outer half of the wings rusty ocherous, the veins somewhat darker. Hind wings very pale. Expanse, 17-25 mm.

Caterpillar.—Shape as in *flavula*, as are also the depressed spaces. Color green, depressed spaces pale with dark centres. Dorsal mark reaching the extremities and lateral margins in the form of a cross with four projections from the center, or filled out to a larger diamond-shaped mark, produced narrowly forward to joint two. Patch reddish or purplish, usually darker around the edge, bordered with crimson and yellow. The exact shape and size is variable. Length, 6-9 mm.

Food-plants.—Oak, Wild-cherry, Birch, Hickory, Chestnut, Witch-hazel, Sour-gum.

Common locally. The moth is found late in June, but mostly in July, and the caterpillars are found fully grown in August and September.

***Tortricidia minuta* (Rearkirt).**

Fore wings and body clay colored, with a silky look; hind wings blackish or brownish. Expanse, 10-12 mm.

Recorded from the Atlantic States, and probably found in this vicinity. Early stages not known.

***Heterogenea shurtleffii* Packard.**

Male.—Deep brown, with two darker lines, beginning on inner margin, running upwards and meeting in a curve around the discal area. A curved line from the apical third to the hind margin. Hind wings uniform smoky brown black. Expanse, 12 mm.

Female.—Larger, wings more pointed and very much paler than in the male, almost uniform ocherous, lines similar. Hind wings fuscous testaceous. Expanse, 15 mm.

Caterpillar.—Elliptical, tail rounded, slightly notched at the sides. Dorsal space as broad as the lateral one, flat; lateral space steep above, slightly concave; subventral space retracted; the larva is therefore flattened; subdorsal ridge slight; lateral ridge prominent. Pale yellowish green, shading to nearly colorless on the lateral ridge; the dorsum and upper part of lateral area on segments five to ten distinctly spotted with emerald green pigment. A narrow yellow subdorsal line, slightly unevenly edged on joints three to twelve, the

pair free and uniform or partly or wholly connected by a yellow bridge, usually with a small red spot, or rarely by a large one, covering joints six to eight, and widened on joint seven. The red spot varies in color from vermilion red to light blue or dark slaty blue edged with crimson. On joint two in front is a transverse yellow line, edged with crimson below. A series of red spots usually appears, beginning on the collar in front and extending to joint four, the spots dull and diffuse. Length, 5-8 mm.

Food-plants.—Oak, Chestnut, Beech.

The moth emerges during the first week in July, and the larvæ may be found fully grown early in August, but a few last into September. The larva does not leave the tree, but spins its cocoon in the crevices of the bark.

Packardia geminata (*Packard*).

Fore wings whitish with a large triangular brown patch and two white spots at the hind angle. The patch is composed of three brown lines, with the spaces between filled with brown. Hind wings whitish, as is also the body. Expanse, 20-24 mm.

Var. **albipuncta** *Pack.*—Uniform gray brown with the triangular patch somewhat darker or concolorous, and with the two white spots at hind angle present. Hind wing concolorous.

Var. **ocellata** *Grote.*—The whitish ground color dusted with ferruginous scales, especially at base, and in the spaces of the darker lines forming the triangular patch, apex whitish. Hind wings gray brown.

Var. **goodellii** *Grote.*—Fore wings almost uniform seal brown with the lines slightly darker and hardly visible, apex paler. Two white spots at angle. Hind wings concolorous, deep seal brown.

Caterpillar.—Body elongated, sides subparallel, rounded towards the anterior end and sloping backwards, the last segment produced into a slender tail. Dorsal space broad, flat, and narrowing at both ends; lateral space broad, oblique; subventral space two-thirds as wide as the lateral one. Whitish green, opaque, with a yellowish white straight line along the subdorsal ridge, with upper dark green clear border. Depressed spaces very small, the dorsal ones smooth, whitish with green centers. A row of white dashes on the lateral ridge and a dorsal green line, interrupted by the impressed spots. Length, 7-11 mm.

Food-plants.—Wild-cherry, White-birch, Black-birch, Oak, Sour-gum, Hickory, *Myrica* and *Clethra alnifolia*.

The moth makes its appearance in June and the eggs are deposited singly on the under side of the leaves. The caterpillars

frequent dry woods and bushes on the edges of fields. They are low feeders and are often found on small plants, only a few inches from the ground. Not common and single brooded.

Packardia elegans (*Packard*).

PLATE XVII, FIG. 14. MALE.

Fore wings grayish black or brownish to pale buff, with three white lines, one from the middle of the costa to the basal third of inner margin, one from the costa to nearly the hind angle, and the third from the middle of this last line to the inner margin before the angle and parallel to the basal line. Two black spots at the angle. Hind wings grayish. Expanse, 14-18 mm.

Var. **fusca** *Pack.*—This form has the ground color brownish instead of grayish black, with the lines the same as in *elegans*.

Caterpillar.—Shape as in *geminata*. Light yellowish green, lateral edge clearer, dorsal space darker. A wavy, narrow, yellow subdorsal line composed of a series of intersegmental, inwardly lunate, jointed yellow marks; tail reddish brown above. Six of the depressed dorsal spaces are visible as white rings, around which more or less light green pigment forms in rings, transverse bands, or filling all the dorsal space. A broken subventral line. Lateral space with depressed spaces, large pale rings with dark centers. Length, 7-11 mm.

Food-plants.—Cherry, Linden, Witch-hazel, Hornbeam, Beech, Oak, Chestnut, Maple, Birch, Sour-gum, Hickory and *Leucothoë racemosa*.

Not common in this neighborhood except locally. The moth appears late in June and early in July. The caterpillars live on low plants and frequent dark woods. Single brooded.

Lagoa crispata *Packard*.

PLATE XVII, FIG. 19. MALE.

Very woolly. Pale straw yellow. On the fore wings the long woolly scales are arranged in transverse wavy wrinkles. On the costa, above the middle, the wool is blackish and beneath brownish. Head, below base of fore legs and tarsi, blackish. On the costa of the fore wings beneath is a broad blackish streak. Expanse, 25-35 mm.

Caterpillar.—Body thick, short and fleshy. Head retractile. On each side of the body are rows of spherical tubercles from which arise dense bunches of tawny brown, soft hairs, meeting over the dorsum in form of a ridge; the hairs along the sides and on the first two segments are smoky black. Seven pairs of abdominal legs and three pairs of thoracic feet. Length, 20 mm.

[*October, 1898.*]

Food-plants.—Blackberry, Apple, Pear, Plum, Cherry, Basswood, Sassafras, Alder, Willow, Oak, Hazel, Sycamore, Birch, *Myrica*, etc.

The caterpillar is common along the edges of woods or overgrown fields. In its earlier stages, up to the moult before the last, it is densely covered with long flossy, pure white hairs, looking very much like a piece of wool. The cocoon is formed on the ground of tough silk, elongate in shape, and when the moth emerges, it cuts out a circular piece which remains on the cocoon, in shape of a lid, with the pupa sticking half way out. The species is single brooded and the moth emerges in June. The caterpillar hibernates in the cocoon and forms a pupa the following spring.

Lagoa opercularis (*A. & S.*).

A single specimen of this southern species was taken in Prospect Park, Brooklyn, N. Y. City, and its occurrence there was probably accidental.

Apatelodes torrefacta (*A. & S.*).

PLATE XVIII, FIG. 3. MALE.

Fore wings ash gray, clouded outwardly with smoky brown. Across the basal third are two brown, parallel, wavy, narrow, transverse lines and two similar ones across the outer third. On the inner margin near the base is a deep brown patch, and a small white spot beneath the apex. Hind wings dull reddish, sometimes washed with ashen gray, and with two ill-defined transverse lines, the outer one whitish and marked at the inner angle with two deep brown dashes. Head and thorax ashen gray, the latter with a deep brown band across the posterior part. Abdomen gray, and tuft tipped with deep brown. Expanse, male, 36-40 mm.; female, 50 mm.

Caterpillar.—Head dirty white. Body creamy white with a broken black dorsal stripe on which are tufts of hairs of the same color. A black spot on each segment along the sides. Body covered with long, white, flossy hairs directed backwards, except those on the anterior segments, which are directed forwards. On the back of each of the second, third and eleventh segments is a long mouse-colored pencil, tipped with white at the ends. Abdominal legs black, the extremities pinkish. Thoracic feet black. Sometimes the body is pale yellow with the hairs bright sulphur yellow, with the pencils ferruginous, tipped with black. Sometimes the body is black with the hairs maltese gray. Length, 45 mm.

Food-plants.—Wild-cherry, Willow, Alder, Blackberry, Bayberry (*Myrica*), Azalea, Sassafras, Hazel, Viburnum, Ash, Ironwood and Spice-bush.

Rather common in certain localities. The moth appears during June and again in August, and the larvæ are found during July, August, and in September. They enter the earth for pupation.

***Apatelodes angelica* (Grote).**

Fore wings pale ashen gray with two darker transverse shades, one before and one beyond the middle. Beyond the outer one is a transverse row of small black dots and another row before the first band. In the apical area are two semitransparent white spots. Hind wings darker and of a brownish shade with two narrow, ill-defined, transverse lines. Head, thorax and body ashen gray. Thorax with a pale brown line along the middle and the abdomen is finely scaled with brown along the back. Expanse, male, 40-45 mm.; female, 45-59 mm.

Caterpillar.—Head dark brown, with two lighter brown lines in front. Body color gray, with numerous fine black lines. On the first segment anteriorly are four dorsal white lines, posteriorly black; second and third segments anteriorly black, behind which are irregular black lines; on segments five and ten the dorsal black lines assume a V-shape, the apex resting on the suture and enclosing centrally two yellow, subelliptical spots, with a similar spot exterior to each within the superior lateral stripe. First segment with long whitish brown hairs extending over the head, nearly concealing it; from the middle of the second and third segments whitish hairs project forward. The whitish hairs at the sides straight, those on the back directed backwards. Last segment with white and brown hairs. Along the back a row of tufts of black hairs. Length, 45 mm.

Food-plants.—Lilac, Ash.

Scarce in this neighborhood, and probably double brooded. The moth emerges early in June, and fully-grown caterpillars may be found in September.

***Gluphisia septentrionis* Walker.**

PLATE XVIII, FIG. 10. MALE.

Fore wings dark gray, with three narrow wavy black lines, with the basal and median spaces dull ochereous, more or less dusted with blackish scales. Hind wings gray. Body somewhat darker. Expanse, 20-30 mm.

Caterpillar.—Head smooth, polished, darker green than the body, with two black stripes on each side, not meeting on the vertex. Body green, tapering at the end, smooth, with a few scattered minute hairs and a conspicuous yellow subdorsal line on each side, between which is a pink red blotch on each of the first three segments, and a square spot of the same color on the seventh to twelfth segments, with the space between the spots more or less yellow. Sometimes the red markings are absent, sides of body and under side green. Length, 30 mm.

Food-plants.—Willow, Poplar, Yellow-birch, Sweet-gum.

Not common, and double brooded. The caterpillar spins a cocoon composed of a very light web of silk between leaves. The moth occurs from about the middle of May to the middle of August.

Gluphisia severa Hy. Edw.

Fore wings gray with three transverse lines, the outer one white and composed of small waves. The space between the two outer lines dark blackish, with an ochereous patch beneath the median vein. Outer part of the wing broad, blackish or grayish, through which runs an ochereous shade. The space between the first two lines light gray sprinkled with black, and at the base is an ochereous patch. Discal mark angular, ochereous. Hind wings blackish or grayish, with two indistinct broken lines. Head and thorax gray, abdomen paler. Expanse, 40-45 mm.

Var. *danbyi* Neum.—In this form the markings are obscured.

Var. *avimacula* Hudson.—Fore wings gray, lines black, with the spaces between gray instead of blackish as in *severa*, and it also lacks the ochereous patch beneath the median vein. Discal mark black, reniform, with two ochereous spots.

Var. *slossoniae* Packard.—Fore wings pale ash gray, basal fifth brown black, sending out five sharp, tooth-like projections and a broad median oblique band enclosing a white triangular discal spot, the apex pointing upwards.

Caterpillar.—Head very slightly bilobed, pale uniform green, with a yellow line on each side; mouth parts paler, jaws black. Body green, dorsal region whitish green, almost white; along the spiracles is a yellow line, bordered above very narrowly with crimson on the first three segments. Subventral region clear green with yellow dots. Spiracles orange. Length, 41 mm.

Food-plant.—Poplar.

Very rare in this neighborhood. It has been found on the Palisades in New Jersey, and will probably also be found in other

localities. The moth appears in April and the larva in May and early in June. Single brooded. *Severa* and *danbyi* are the Pacific Coast forms, while *avimacula* is the form found in this neighborhood, and *slossoniæ* occurs in New Hampshire. Spins a cocoon between leaves.

***Gluphisia lintneri* (Grote).**

Fore wings dark gray, scaled with black, shaded with ochreous at base and at the median space and along the subterminal line. Transverse lines black, outer one faintly white. Discal mark faint, linear. Hind wings gray, with a mesial shade line followed by whitish and shaded with blackish on external margin at angle, where a second line is indicated. Expanse, 40 mm.

This species is found in the northern parts of New York and in the New England States. It flies from early in April until early in May. It has not as yet been taken in this vicinity, but may possibly occur here. The larva is not known.

***Datana ministra* (Drury).**

PLATE XVIII, FIG. 2. FEMALE.

Fore wings ochreous brown to dark russet brown, with five transverse, darker lines. The basal one is curved. The remaining lines are beyond the middle, of which the first is abruptly curved at the end of the cell, while the others are but slightly curved or almost straight. In the cell are one or two dark spots. Hind wings much paler than the fore wings. Thorax with a large, deep velvety ferruginous brown patch. Expanse, 35-50 mm.

Caterpillar.—Head jet black, sometimes chestnut red, but very rarely so, shining. Neck bright yellow, cervical shield dull orange. Body pitchy black with four sulphur yellow equidistant longitudinal stripes on each side, all being much narrower than the intervening spaces, the dorsal space the widest; anal plates jet black, roughly punctured. Under side with three yellow stripes. Thoracic feet jet black, with their bases yellow; abdominal legs bright yellow, banded with jet black outside. A few sordid white hairs are scattered over the body, most numerous along the sides. Length, 55 mm.

Food-plants.—Cherry, Pear, Apple, Quince, Linden, Oak, Chestnut, Beech, Hazel, Hornbeam, Birch, Walnut, Hickory, etc.

The moths emerge from late in June until early in July, and are single brooded. The caterpillars live socially, in clusters of about fifty or more individuals. They mature in August and in

September, and enter the earth to pupate. The characteristic attitude of this, as of the other species, when disturbed, is to raise the head and tail, bending the body in a semicircle till both ends meet over the back.

Datana drexelii Hy. Edw.

Allied to *D. ministra*, with the lines the same. It differs from *ministra* by having the costal area for nearly one-third the width of the wing bright ochreous and the discal spots more distinct. Hind wings darker, on an average. Thoracic patch more ochreous. Expanse, 35-50 mm.

Caterpillar.—Head jet black, shining. Neck and cervical shield golden yellow. Body black with four equidistant citron yellow stripes on each side, and three on the under side. Abdominal legs and bases of thoracic feet golden yellow. The stripes all become confluent at the posterior extremity. Anal plate jet black and very shining. Hairs over the body sordid white. Length, 55 mm.

Food-plants.—Huckleberry and Witch-hazel.

Single brooded. The moth emerges early in June, and earlier in the season than *ministra*. The caterpillars are fully fed in July and August. They live socially like *ministra*, but usually there are fewer individuals in each cluster. They differ from *ministra* by the citron yellow stripes being confluent at the posterior extremity.

Datana major G. & R.

Fore wings somewhat as in *drexelii* in color, as are also the transverse lines. The second line, however, is more oblique, and runs more inwardly in its downward course, meeting or almost touching the basal line on the inner margin. Discal spots conspicuous, the second spot usually beyond or on the second line. The outer border is almost even, and not so much scalloped as in *drexelii* and *ministra*. A slight ochreous shade along the costal area. Hind wings and thoracic patch as in *drexelii*. Expanse, 25-55 mm.

Caterpillar.—Head bright mahogany red. Cervical shield, anal plate, abdominal legs, thoracic feet and corresponding spots on legless segments, mahogany red. Body black with the stripes broken into a series of irregular square white or lemon yellow spots, sparsely covered with white hairs, and with very short black ones, which are only visible under a lens. Length, 60 mm.

Food-plants.—*Andromeda ligustrina*, Witch-hazel and Sumac (*Rhus glabra*).

Not common, except locally. The moth comes forth in June and July, and the larvæ mature in August and early in September. They live in clusters, as in the other species, and before the last moult are beautifully striped with white or lemon yellow. Pupate in the earth. Single brooded.

Datana angusii G. & R.

Fore wings varying from chocolate to deep smoky brown, differing in this respect from all the other species of this genus. Along the costal region the color is of a shade darker than the rest of the wing. Lines like those of *D. minima*. Hind wings paler. Thoracic patch very deep brown. Expanse, 35-45 mm.

Caterpillar.—Head and cervical shield jet black, shining. Body black with three equidistant, very narrow, pale yellow or whitish stripes on each side, very much narrower than the intervening spaces. Under side with three yellow stripes,—one along the middle, which is the broader, and one on each side, broken by the legs. Abdominal legs and spots on the legless segments reddish. Thoracic feet black. Hairs on body dirty white. Length, 55 mm.

Food-plants.—Hickory, Walnut, Butternut.

Rather common in this vicinity. It is single brooded, the moths appearing in June and the larvæ maturing in August. They live in colonies of about thirty individuals, and enter the ground to pupate.

Datana palmii *Beuten*.

Head and thoracic patch deep velvety brown, remaining parts of thorax cinnamon brown, mixed with whitish scales. Fore wings cinnamon brown, thickly covered with whitish scales, so as to almost obscure the ground color. Across the wings are four narrow, transverse lines, same as the ground color. The first is oblique, the second slightly curved; the third a little beyond the middle and the fourth across the apical fourth, both the latter curved outwardly. Hind wings pale cinnamon brown. Expanse, 40-50 mm.

Caterpillar.—Head light orange red, with a brownish tinge. Body black, with four pale yellow stripes, narrower than the intervening spaces, the lateral ones becoming white or canary yellow in some specimens. Cervical shield, anal plate and abdominal legs, except an outward blackish band on the latter, same color as the head. Bases of legs and corresponding spots on legless segments, darker red. Thoracic feet black. Hairs sordid white. Length, 50 mm.

Food-plant.—Huckleberry (*Vaccinium stamineum*).

Very rare in the vicinity of New York, but more common in the Catskills and at Delaware Water Gap. The moth emerges in June, and is single brooded.

***Datana integerrima* G. & R.**

Fore wings light brown with five transverse lines followed by light shades. Over the wings are fine darker irrorations. Outer margin even, in the male, very slightly scolloped in the female, which is of a paler shade. Two discal spots. Thoracic patch dark ocherous. Hind wings paler. Expanse, 35-45 mm.

Caterpillar.—Body wholly black, covered with long floss-like, white hairs. Sometimes there are visible a subdorsal, ill-defined, white stripe, a rather broad wavy, lateral stripe and one along the middle of the under side. Head jet black, shining, rarely chestnut red. Abdominal legs black outside and reddish brown inside. Length, 55 mm.

Food-plants.—Walnut, Hickory, also Beech and Oak, but very rarely.

Very common, and single brooded. The caterpillars live in large colonies, and when about to shed their skins they leave the branch upon which they have been feeding and select some convenient place where they can perform this operation. They usually select the trunk of the tree, sometimes descending nearly to the base, where they congregate in form of a thick ball-like cluster, held together by silken threads. As they march along they spin a path of silk, so as to insure their safe return to the tree top. The moth hatches out in July, and the caterpillars become fully grown in the latter part of August and in September.

***Datana contracta* Walker.**

Pale tawny luteous, with numerous dark brown or blackish irrorations. Lines as in *integerrima*. Discal spots present. Hind wings and body pale luteous. Thoracic patch dark ocherous. Expanse, 35-45 mm.

Caterpillar.—Head black. Cervical shield orange. Body black with four creamy white stripes along each side, as wide as the intervening spaces, and three stripes beneath. Abdominal legs yellowish brown, extremities black, and with yellowish brown spots on the legless segments. Thoracic feet black, bases yellow brown. Length, 55 mm.

Food-plants.—Oak, Chestnut, and rarely Hickory.

Common in this vicinity, and single brooded. The moths come forth early in July, and the larvæ are fully grown in August and September.

***Datana perspicua* G. & R.**

Fore wings clear yellow buff with the transverse lines, apical streak and narrow outer border bright ferruginous. Usually there are only four lines instead of five. Discal spots large, conspicuous, ferruginous, the outer one being the largest. Hind wings paler. Body yellow buff, with the thoracic patch rusty ocherous. The lines are sometimes more or less distinct or partly broken before they reach the costa. Expanse, 40-55 mm.

Caterpillar.—Head and cervical shield black or red. Body black or red, with very broad canary yellow stripes as wide or wider than the intervening spaces. Thoracic feet black or red. Abdominal legs red or blackish. Length, 55 mm.

Food-plants.—Sumac (*Rhus glabra* and *R. typhina*).

Common in this neighborhood. The moths appear late in June and early in July, and the caterpillars in August and September. Single brooded.

***Melalopha inclusa* (Hübner).**

PLATE XVIII, FIG. 5. MALE.

Fore wings cinereous with ocherous tints and shaded with brown scales. At the base is a transverse line dislocated about the middle, and beyond is a short line meeting an oblique line which runs from the costal third to the outer third of the inner margin, where it meets another line which runs upwards to the costa, and forms a V-shaped mark. This last line is bent at the costa and followed by a rusty patch. A submarginal row of black spots also present. Hind wings uniform in color with a median paler line. Body same color as wings with a broad median umber brown band from the top of the head to the summit of the crest on the thorax. Expanse, male, 30-35 mm. ; female, 35 mm.

Caterpillar.—Head and cervical shield black, shining. Body cylindrical with a double tubercle on the top of the fourth and eleventh segments. Along the back are four narrow yellow lines alternating with black ones, and on the subdorsal space are irregular alternations of blackish and dusky lines. Below the spiracles is a yellow line, and below this, on the substigmatal space, the body is flesh colored. A few gray hairs are scattered over the body. Length, 30 mm.

Food-plants.—Different kinds of Willow and Poplar.

Very common and double brooded. The caterpillars live in colonies of ten to twenty or more individuals, in a tent made of folded leaves lined with silk. The first brood appears from May to July, and the second brood from August to October. Spins a loose cocoon between leaves, usually on the ground.

Melalopha apicalis (*Walker*).

Fore wings light ashen gray, with a lilaceous tint, and shaded with dark ashen gray lines similar to those of *M. inclusa*, whitish, the fourth line widened and white at the costa, and more obliquely bent outward than in *inclusa*. At the costa the white mark is followed by a reddish shade. Subterminal row of spots dark. Hind wings mouse gray, with a median lighter line-like shade. The brown thoracic line as in *inclusa*. Expanse, 22–28 mm.

Caterpillar.—Head brown, cervical shield widely divided into two transversely oval brown black plates. Body along the back ash gray or greenish white, traversed by three pale reddish brown lines, more or less broken. Sides of body darker and containing two darker irregular lines, giving it a marbled appearance. Four yellow tubercles on each segment from the second to eleventh. There are no humps nor warts on the fourth and eleventh segments, thus differing from the larva of *inclusa*. Thoracic feet black; abdominal legs livid ash. Length, 27 mm.

Food-plants.—Willow and Poplar.

Not common. Little is known about the habits of this species, which are said to be similar to those of *inclusa*. The larva may be found fully grown in August and September, and the species seems to be double brooded. Spins a rude cocoon like that of *inclusa*.

Melalopha albosigma (*Fitch*).

Fore wings varying from light to dark ochreous brown with a large, conspicuous, rusty brown apical patch, limited inside by the fourth transverse line which forms a prominent, clear white angle at the costa. First and second lines oblique, third line slightly bent and almost touching the fourth line before it reaches the inner margin. Across the outer part of the wing is a subterminal dark shade. Thoracic mark broader than in *inclusa* and *apicalis*. Hind wings light brown. Expanse, 30–34 mm.

Caterpillar.—Head black, with a Y-shaped pale brown line in front, densely covered with grayish hairs. Body straw yellow, with three dorsal, more or less

interrupted grayish or pearly pale brown lines, and a broad lateral stripe, below which the tubercles are yellow. The first three segments bear each six rather large yellowish warts, the lowest being the largest, each having a number of unequal hairs. On the fourth segment is a high finger-shaped fleshy-black tubercle, bent backwards and bearing a number of hairs. On the eleventh segment is a smaller and paler tubercle. Thoracic feet black. Abdominal legs dark. Length, 30 mm.

Food-plants.—Willow and Poplar.

Several caterpillars commonly live together in a kind of nest they construct by drawing two or more leaves together with silk, forming a hollow ball-like cavity, within which they repose when not feeding. Double brooded; the moths appear in May and again in July and August. Not common in this vicinity.

Nadata gibbosa Walker.

PLATE XVIII, FIG. 1. MALE.

Fore wings uniform light buff with a rusty tinge. Across the wings are two transverse rusty brown lines, the basal one straight or curved; the outer one oblique and straight. In the cell are two white discal spots. Hind wings pale buff, as is also the body. Expanse, male, 40-45 mm.; female, 45-55 mm.

Var. **rubipennis** Neum. & Dyar.—Has the wings tinted with deep orange brown.

Var. **oregonensis** Bull.—Differs by having a distinct gray tint and greater predominance of markings.

Caterpillar.—Head large, smooth, rounded; whitish green; mandibles bright yellow tipped with black. Body smooth, whitish green along the back and darker along the sides; without tubercles or humps, cylindrical, surface with minute, raised, flattened, more or less confluent granulations and with a narrow, yellow subdorsal stripe along each side. Spiracles orange brown. Anal plate edged with yellow. Legs and feet green. Length, 35 mm.

Food-plants.—Maple, Oak, White Birch and Sugar Plum.

Double brooded. The moths appear in May and again late in June and July, and the larvæ in June and September. It enters the ground, where it spins a loose, soft cocoon, composed of only a few silken threads. Common. Var. *oregonensis* is a western form and does not occur here.

Lophodonta angulosa (*A. & S.*).

PLATE XVIII, FIG. 12. FEMALE.

Fore wings mouse gray, with a large, rounded, whitish area at the middle on the costa; this patch is sometimes absent or is more or less distinct. At the extreme base is a short angulated ferruginous line followed by a small tawny patch. Across the basal third is an angulated ferruginous line, and across the outer third is a line composed of small teeth which are tipped with white outwardly. A subterminal diffuse, paler shade also present. Hind wings dirty whitish or gray, costal margin broadly mouse gray, broken by two whitish bands. Expanse, 35-45 mm.

Caterpillar.—Somewhat like that of *Nadata gibbosa*. Head rounded, deep pea green, with a pink line on each side, edged above with white. Mandibles green at base, with an orange red line along the upper edge, tips black. Body noctuiform, tapering towards the anal legs, pea green, slightly darker below than along the back. On each side is a yellow stigmatal line, edged above narrowly and irregularly with red brown: a faint double whitish, somewhat broken median line, uniting on the anal plate, where it is pinkish, and a faint, narrow, broken one along the subdorsum. Thoracic feet greenish amber, spotted with black outside. Length, 40 mm.

Food-plant.—Oak.

The moth issues from the pupa in June and July, and the species is single brooded. The caterpillar closely resembles that of *Nadata*, but differs from it in habits, for it rests on the edge of the leaf instead of on the back, as *Nadata* does. It forms a cocoon, composed of silk mixed with grains of dirt, beneath the surface of the earth.

Lophodonta ferruginea *Packard*.

Fore wings ferruginous, median space paler. Across the basal third is a transverse line, straighter and less angulated than in *L. angulosa*; outer line curved outwardly and bending inwardly at the middle. In the disc is a large whitish spot, preceded by whitish confluent spots. The lines are shaded with whitish and the veins on the outer part of the wing are blackish with a minute white point on each at the margin. Hind wings whitish; costa mouse gray with two short white bands; outer margin narrow, blackish. Expanse, 45 mm.

Caterpillar.—Head rounded, broad, flattened in front; light green with a white line on each side of the clypeus and another from the palpi converging slightly on the vertex of each lobe; lateral band smoky purplish red fading to yellowish on its lower side, and continuous with the line on the first, second and

third segments. Body soft, yellowish leaf green, cylindrical, tapering posteriorly, with a broad yellowish white, double dorsal band, the space filled with red on the last segment. Faint traces of a broken subdorsal line and two or three round yellow dots laterally. Dorsum faintly shaded with white. Thoracic feet reddish, tipped with black. Length, 40 mm.

Food-plant.—Birch (*Betula papyrifera*).

Not common in this vicinity. It is double brooded, the moth appearing in May-June, and again in July-August. The caterpillar eats an irregular hole out of the side of the leaf and forms a loose cocoon in the ground.

Lophodonta basitriens (*Walker*).

Fore wings ash gray with an oblique dark line from the costal third to the outer fourth, slightly dentate. Outer line dentate. Basal space ochreous, with a darker streak. Veins on outer part black. Hind wings grayish with a paler median line. Head gray, thorax gray mixed with ferruginous. Expanse, 46-49 mm.

Not common. The larva is not known.

Notodonta simplaria *Graef*.

Fore wings uniform dark gray, finely scaled with lighter gray, and with two transverse darker, wavy lines. Discal spot linear, in a paler ring. Subterminal row of dots dusky. Hind wings whitish gray. Head and thorax gray. Expanse, 45-50 mm.

Has been found in the Catskills in August, and possibly also occurs in this vicinity. The larva is not known.

Notodonta stragula *Grote*.

Fore wings slate gray, ochreous and chestnut brown along the inner margin and subterminally, where the color is in the form of a scalloped band. Basal space of wing beneath the slate gray costal area ochreous and chestnut brown with two dark brown streaks. Transverse anterior line scalloped, ochreous. Transverse posterior line obsolete except at inner margin. Discal spot linear. Hind wings white in the male, gray in the female. Expanse, 40-45 mm.

Caterpillar.—Head large, oval, narrowing near the vertex, which is slightly bilobed, of color of body, and mottled with brown. The body is thickest on

the fifth and sixth segments, on each of which is a thick, fleshy, conical, soft tubercle, the apex falling over backward; they may be elevated and somewhat enlarged or depressed, the anterior tubercle the larger of the two; the body is humped on the last segment. Color pearly whitish blue or lilac white, somewhat marbled with brown, except the last two segments, which are golden brown mottled with darker brown. Laterally there are some oblique, pale streaks, somewhat similar to those of many Sphingidæ. A brown dorsal line extends from behind the head to the apex of the second tubercle on the sixth segment; thence extends a faint vascular line to the end of the body. Last segment humped. A pinkish stigmal line. Length, 40 mm.

Food-plants.—Willow and Poplar.

Not common in this neighborhood, and double brooded. The moth appears in May and June, and again in July and August. The singular caterpillar often rests on the edge of a leaf, and its oblique markings and tubercles bear a striking resemblance to a twisted, partly dead and dry portion of the leaf.

***Drymonia georgica* (H.-S.).**

Fore wings ochreous gray, with two black transverse lines edged with white; the first line dentate, outer line curved outwardly, and bending inward beneath the middle, where it is connected with the first line by a black dash. At the base and in outer part of the wings are several black dashes. Thorax grayish, collar edged with black, on each side of which is a white spot which sends a white dash obliquely into the wing. Hind wings whitish or grayish. Expanse, 40-45 mm.

Caterpillar.—Very similar to *Lophodonta angulosa* in color, shape and markings, but has a red button on top of the eleventh segment.

Food-plants.—Various kinds of Oak.

Not common, and double brooded.

***Ellida caniplaga* (Walk.).**

Fore wings uniform ash gray; no distinct transverse line at the base, but just before the middle of the wing are three vandyke brown parallel, close-set lines which begin on the costa, but are most distinct and heavy between the subcostal vein and above the median fold; the outermost and innermost of the three lines extend to the inner edge of the wing, but the inner one is obsolete. On the outer of the three lines is situated the dark vandyke brown, distinct, curvilinear discal spot, and this distinguishes the species from any other Notodontian. On

the outer fourth of the wing are two faint scolloped dark lines, represented by venular spots; a marginal row of irregular brown spots. Hind wings and abdomen ash gray. Expanse, 37-42 mm.

This species has been taken at Poughkeepsie, N. Y., and is undoubtedly also found in this neighborhood. The larva is not known. The moth may be found late in April and in May.

Lophopteryx camelina (Linn.).

Fore wings bright wood brown, with the nervules interruptedly marked with black brown. Transverse anterior line forming two approximate teeth in the cell and dentate beneath. Transverse posterior line obliterated, with a paler shade a little beyond. Hind wings ochreous with a blackish patch at the hind angle. Expanse, 36-40 mm.

Caterpillar.—Body whitish green along the back, with the dorsal vessel forming a blue thread; a subdorsal line of a faint bluish tinge; sides green; sometimes the back is pinkish. Spiracular line yellow, edged above with violet and bearing a red spot behind each spiracle; spiracles black. Under side green with a plum-colored tinge, showing ventral spots of pale yellow. Head smooth, green, mouth parts yellow with a black line. Thoracic legs pink; abdominal legs green, tips red. Last segment with a double, high, conical tubercle on the top of the last segment. Length, 33 mm.

Food-plants.—Poplar, Oak, Alder, Hazel.

Very rare in this neighborhood. It is also found in Europe and northern Asia. The caterpillar is allied to that of *Pheosia*, but differs from it by having a double twined, conical tubercle on the last segment, whereas in *Pheosia* the horn is single.

Pheosia dimidiata (H.-S.).

PLATE XIX, FIG. 7. MALE.

Fore wings whitish brown at the apical third on the costa, with two dark brown streaks. Middle of the wing white, brown along the inner margin, with deep brown and white streaks. Sometimes the brown along the inner margin extends nearly to the apex. Hind wings white, with a blackish patch at anal angle. Head and thorax cinereous. Expanse, 50-60 mm.

Caterpillar.—Head reddish, mottled with lighter color. Body of a peculiar pearly hue, with a porcelain-like polish; segments swollen. Last segment provided with a rather stiff, well-developed black horn. Thoracic feet deep amber

red or salmon color. Abdominal legs large, thick, blackish in the middle; anal pair with a rusty red spot outside. On the under side of the body is an irregular greenish median line. Spiracles black ringed with yellowish white.

Food-plants.—Willow and Poplar.

Not common, and double brooded. May–June and August. The remarkable caterpillar recalls those of the Sphingidæ on account of the horn on the last segment.

***Nerice bidentata* Walker.**

PLATE XVIII, FIG. 9. MALE.

Fore wings rich dark sable brown along the middle and shading into lighter brown at the costa. The brown part sends two prominent teeth into the light gray brown part along the inner margin, which is separated from the brown part by silvery white. Hind wings gray brown. Thorax gray brown with a sable brown patch in front. Expanse, 36–40 mm.

Caterpillar.—Head polished bluish green, narrower above than below, with four perpendicular silvery green lines; first, second and third segments above pale silvery green, interrupted by a straight dorsal and subdorsal line of dark bluish green. On the back of each of the fourth to eleventh segments inclusive is a high prominence, directed forward and ending in a bifid ridge. The upper half of the body, including the prominences, is silvery green with a series of oblique, dark lines, running from the anterior base of the prominence to the posterior part of the following segment. Thoracic segments with a lilac line, bordered above with yellow, above the legs. Summit of prominences yellowish with the extreme edges brown. Spiracles yellow with a lilaceous ring. Length, 30 mm.

Food-plant.—Elm.

Not common. The moth is found in May and June, and again in August. The caterpillar, when resting on the edge of a leaf, very much resembles a part of the leaf. It spins a rude cocoon on the surface of the ground between leaves.

***Dasylophia anguina* (A. & S.).**

PLATE XVIII, FIG. 8. MALE.

Fore wings ashen gray shaded with darker gray. Veins marked with black, and across the outer third is a slightly curved, transverse black line. Near the

hind angle are two black spots, and at the base of the wings is a black longitudinal streak. The female has the basal part of the wing largely ochereous. Hind wings uniform grayish. Expanse, 30-40 mm.

Caterpillar.—Head rounded, greenish amber. Body smooth, shining, with a jet black button or hump on top of the twelfth segment. Purplish red, with seven longitudinal black lines, one dorsal and three on each side, the lateral ones confluent on the eleventh segment, leaving the ground color light blue between them. This color also edges narrowly the dorsal line on each side. Below the lateral lines is a broad yellow stripe, white in the center, and below this a row of large black spots, one on each segment. Dorsum shaded with reddish and a little yellow just above the lateral black lines. The lines do not extend beyond joint eleven. On each side of the twelfth segment is a black spot, and one on each side of the fifth segment. Under side with traces of a black line. Thoracic feet red, claspers of legs reddish. Length, 45 mm.

Food-plants.—Locust, False Indigo (*Baptisia*), Clover.

Not common and double brooded, the first brood appearing in June and the second in August. The larva spins a thin, somewhat tough cocoon, on the surface of the ground between leaves or chips.

***Dasylophia thyatiroides* (Walker).**

Fore wings light mouse gray, middle part grayish, dusted coarsely with brown. Differs from *anguina* in having a zig-zag or scalloped cross line on the basal third of the wing, within which the wing is tawny brown; also a double scalloped line ending just within the inner angle. Costa towards the apex interrupted by gray spots, which are more distinct on the under side. A submarginal row of very oblique, dark linear spots between the veins, succeeded by lighter, longer streaks of light tawny white. Fringes gray, with dark spots. Pectinations of antennæ a little longer than in *anguina*. Hind wings mouse brown. Expanse, 36 mm.

A northern species, very rarely found in this neighborhood. The larva is not known, but is said to live on Hickory. The moth is found in July.

***Symmerista albifrons* (A. & S.).**

PLATE XVIII, FIG. 7. MALE.

Fore wings cinereous, with darker shadings and two double transverse lines within the middle, an obsolete line beyond, and a subterminal, dentate, black line. The costa from the middle to the apex is broadly white, with a rounded

tooth projecting inwards. Discal mark linear. Thorax cinereous, ochereous in front. Head ochereous. Hind wings gray. Expanse, 30-40 mm.

Caterpillar.—Head bright orange testaceous. Ground color of body flesh-colored or pink, with five equidistant black lines on the back, and broken at the junctions of the segments. On segments one to three are only three lines, following which lines is a rather broad orange yellow stripe, and another of the same color along the spiracles; between the two orange stripes are three narrow black lines. All these lines terminate on the eleventh segment, which has a coral red hump, the color uniting with the lateral orange stripe. Last segment spotted with black; extreme sides also spotted with black in form of broken patches. Legs pinkish flesh-color. Length, 40 mm.

Food-plants.—Various kinds of Oak and Beech.

Quite common everywhere, and single brooded. The moth makes its appearance during June and early in July, and the caterpillars may be found until late in September. They live in swarms and spin a cocoon on the ground when fully fed. The caterpillar may be easily known by its conspicuous colors and the coral red hump on the eleventh segment.

***Hyparpax aurora* (A. & S.).**

PLATE XVIII, FIG. II. FEMALE.

Fore wings light yellow, with the terminal space broadly pink, as is also the costa and basal part of the wings. Hind wings white, tipped with pink at the anal angle. Head pink; thorax yellow, anterior half pink. Discal mark linear, pink. Expanse, 30 mm.

Caterpillar.—Head rounded, ground color white with a yellow tint, reticulated with mottled bands of purple brown, a broad one running from the antennæ to the top of each lobe. The fourth and eleventh segments each with a prominent elevated tubercular hump. Body whitish green at the sides, finely dotted with white and brown, and shading into brighter green on segments one to three. On the first three segments is a purple brown dorsal band, dotted with white and bordered with yellow. Beginning at the tubercle on the hump on the fourth segment is a white subdorsal band, marked with five irregular purple brown lines, ending on the last segment. Dorsal space bright yellowish leaf-green, dotted with white, with indications of a narrow white dorsal line. Under side and legs purple brown, dotted with white. Tubercle on sixth segment marked by a small white patch, and there is an enlargement of the subdorsal line on the seventh segment. Length, 35 mm.

Food-plant.—Oak.

The moth appears in the latter part of May and early in June ; the second brood comes forth in August. The caterpillar enters the ground, forming a thin cocoon of silk and dirt.

Ianassa lignicolor Walker.

PLATE XVIII, FIG. 4. MALE.

Fore wings light gray with darker longitudinal shades and streaks. At the base is a blackish dash. Discal spot obscure. Hind wings whitish with a grayish patch at the anal angle. Expanse, 35-45 mm.

Caterpillar.—Head not very large, with a depression at the summit, smooth ; whitish ash, with two mottled yellowish and dark ash bands, dentate inwardly, dividing the ground color in front into spots. Similar markings occur on the sides of the head, giving it a marbled appearance. First three segments pea green with a triangular dorsal patch, light brown, widest and forked on the first segment ; at the sides is a narrow brown border. Fourth segment provided with a large brown, pointed tubercle, curved forward ; on the eleventh segment is a small tubercle ; fourth to sixth segments pale gray and reddish brown. the fourth less marbled than the fifth and sixth, and watered with gray ; the back from the seventh to the last segments is clear deep pea green, with the green running into the seventh segment, and the brown and gray running along the sides to the end of the body. On the top of the ninth segment is an ashen brown spot. Length, 35 mm.

Food-plants.—Different kinds of Oak ; Beech and White Birch.

Not common, and possibly two-brooded. The larva is found from July until late in September. It spins a tough cocoon between leaves on the ground.

Schizura ipomœæ Doubleday.

PLATE XIX, FIG. 8. MALE.

Fore wings brown, sometimes with a reddish tinge in the male ; costal region grayish ; nervures blackish. Transverse lines indicated by black dots. Discal spot reddish brown, linear, surrounded by gray, in a black cloud. On the outer part of the wings are two obsolete rows of black dots. Hind wings whitish, with dark margin in the male ; smoky brown in the female. Expanse, 35-43 mm.

Var. *telifer* Grote.—Has the fore wings as in *ipomœæ*, but with two black, longitudinal dashes, one at the base on the middle, and one above and beyond, reaching almost to the outer margin.

Var. **cinereofrons** *Packard*.—Fore wings from the base to the outer edge along the middle very dark smoky brown, obscuring all the markings except the discal spot. Costal region from a little beyond the base light gray; inner margin brown.

Caterpillar.—Head small, high, pale bright purplish, darker down the front, with two parallel black brown lines on each side, bordered with paler and enclosing a clear purplish band. First segment mottled with reddish and pale flesh color at the sides, and a dorsal band, divided in the middle by a pale yellow line, which narrows to half as wide on the second segment, and passes back to the horn on the fourth segment; the rest of the second and third segments are green; the fourth to last segments are faded, dull blood red, due to fine, flesh-red lines and mottlings on a carneous ground. On the fourth segment is a high, fleshy, soft tubercle or horn, which is bent a little backward; the basal half is mottled and lined like the segment from which it rises, but above becomes bright, clear, blood red, forked at the end, each fork bearing a black bristle; a black median line passes along the tubercle, becoming forked in front and behind at the base. Two large, high twin tubercles on the eighth segment are not so high as the two similar ones on the eleventh segment; both are blood red. The small dorsal tubercles on the fifth and sixth segments are minute and yellow, those on the seventh are partly blood red. On the fourth to eighth segments is a porcelain white band, bordered with faint yellow, and containing deep pink, irregular, broken lines, the part on the fourth segment behind the tubercle being triangular and that on the fourth round. On the ninth segment is a white, V-shaped mark, acute in front. Thoracic feet pale flesh color. Beneath the first three segments are green, and the rest much as above, as are also the legs. Length, 18–33 mm.

Food-plants.—Oak, Maple, Birch, Blackberry, Elm, Huckleberry, Honeylocust, and *Ceanothus*.

The moth may be found in June and again in July–August. Double brooded. The larva wonderfully mimics a dull blood red portion of a leaf which has been cut partly off and become somewhat twisted. The red on the larva is somewhat variable in tint. Found until late in September. Spins a cocoon covered with dirt on the surface of the ground.

Schizura leptinoides (*Grote*).

Fore wings ash gray with a brownish tint, slashed with narrow, black, broken lines or streaks; discal spot small, black; apex whitish; transverse lines blackish, geminate, undulate, obsolete, especially in the female. Hind wings whitish in the male, dark gray in the female. Expanse, 35–40 mm.

Caterpillar.—Head somewhat notched above, clay yellow, with two broad dark brown bands in front, which are made up of irregular, wavy, dark lines and spots; labrum carneous. Body uniformly pale brown, with a broad dark brown dorsal stripe along the first three segments, and continued upon the base of the head in form of a triangular spot. On the fourth segment is a large, high, fleshy cylindrical tubercle of the same color as the body, which nods back and forth as the creature walks; it bears two piliferous tubercles at the end; on the eighth segment is another large fleshy hump bearing two small tubercles, and on the last segment is a prominent fleshy hump bearing two small piliferous warts. Behind the first hump is a long triangular flesh-colored dorsal band; on the sixth segment is a similar band, and a similar flesh-colored one on the seventh segment, which breaks up into three diverging stripes ending at the suture. The V-shaped dorsal mark on the ninth and tenth segments is faded pink edged with clay yellow and dark brown. Along the sides is a narrow dark line. Length, 25–30 mm.

Food-plants.—Oak, Hornbeam, Beech, Chestnut, Hickory, Walnut and Butternut.

The caterpillar is subject to variation in depth of coloration from pale to dark brown or almost black in different examples. It mimics a part of a dead leaf. The moth appears in June and again in August.

Schizura unicornis (*A. & S.*).

Purplish gray, tinged with sea-green at base and along costa of the fore wings; frequently with a buff-colored apical patch in the male. Discal spot black, linear, and followed by a blackish shade. Transverse lines faint, blackish, wavy, the outer lines succeeded by a reddish brown shade. A series of subterminal dashes, and a few white marks. Hind wings whitish in the male, dark gray in the female. Expanse, 30 mm.

Caterpillar.—Body pale rust red, with a pea green patch on each side of the first three segments. Fourth segment with a large, high, acute tubercle, with two small tubercles at the tips. On the eighth is a slight hump with two small warts, and on the last segment is a rather large dorsal hump, supporting two warts, in front of which is a long, broken, silver V-shaped mark, the apex pointing forward. At the sides are three oblique lines connecting with a dark line above the spiracles. Ground color variable, from red brown to grayish brown. Length, 30 mm.

Food-plants.—Blackberry, Apple, Plum, Thorn, Elm, Birch, Hazel, Alder, Locust, Cherry, Dogwood, Oak, Ilex, Rose, Willow and Hickory.

The moth appears in May and June, and is double brooded. The larva may be found until late in September. It spins a cocoon on the ground between leaves. Common everywhere, but not abundant.

Schizura apicalis (*G. & R.*).

Purplish ash gray; discal spot on fore wings large, lunate, followed by a black cloud. Transverse lines obscurely geminate, black, coarsely waved, the outer one curved outward opposite the cell; lower half of wing clouded with brownish; middle of wing whitish, frosted over with white scales; a narrow black basal streak. Veins outwardly lined with black. Discal mark distinct. Hind wings white in the male, with a black spot at the anal angle; blackish in the female, with a central pale band. Expanse, 30 mm.

Very rare in this vicinity, and the larva is not known. It may be recognized by the large, heavy, discal mark, the distinct black submedian streak, the fawn brown fore wings, and by the white bands in the middle of the wing.

Schizura badia (*Packard*).

PLATE XVIII, FIG. 6. MALE.

Fore wings reddish brown at base. Transverse bands geminate, sinuous, reddish brown, narrow, space between these lines ashen gray brown, sometimes flushed with purplish gray; discal spot black, linear, and followed by a conspicuous black shade, giving it the appearance of a large prominent patch. Outer part, beyond the lines, largely reddish brown at angle, and a black subapical patch; apical parts of wings sometimes slashed with white and black in the male. Hind wings grayish brown in the male, uniformly brown in the female. Expanse, 30 mm.

Caterpillar.—Head white, with a faint yellow tinge, and with two purplish brown bands in front, extending to the vertex and mottled with round dots of the ground color; a fainter similar band behind the ocelli. Body green on the sides of the first to third segments inclusive, with a purple brown dorsal band mottled with white and tapering on the fourth segment. A white subdorsal shade from the fourth to the last segment, diffuse downward and cut by oblique lines of the ground color, broken on joint ten, the posterior part continued forward from joints ten to nine and becoming yellow, forms a V-shaped mark supplemented by a few dots on joints eight and ten. A distinct yellow dorsal mark, composed of spots from the fourth to the seventh segments, the spots on joint seven separated by a brown Y-shaped mark. Sometimes the sides of joints

four to seven are more or less covered with dark brown mottled with white, and the brown usually prevails in a band on the fourth segment back to the abdominal legs. Sixth segment sometimes brown, with the yellow dorsal marks present. Thoracic feet pinkish, abdominal and anal legs brown. A very slight prominence on the fourth and last segments. Length, 35 mm.

Food-plants.—Different kinds of *Viburnum*.

Not common, and double brooded. The moth may be easily known by its purplish brown color and conspicuous, large discal spot and shade.

Schizura eximia (*Grote*).

Fore wings ashen gray, with dashes of ochereous brown; transverse lines absent; inner margin for two-thirds of the width of the wing purplish brown. Discal dot very small, round, black. At the base of the wing is a short black dash. Hind wings gray brown, darker in the female. Expanse, 42-50 mm.

Caterpillar.—Head dirty white, with a band on each side, composed of spots of brown black, dotted with red. Body pale brown, with a mossy olivaceous brown shade along the dorsum, distinct on the last four segments, and often quite greenish. Segments six to eight diffused with pink dorsally. V-shaped mark distinct, pinkish, with centering red lines, but remaining narrow and diffuse. First three segments dirty whitish, dotted with brown reticulations and a dorsal shade. An oblique olive brown line runs from the base of the long fleshy tubercle on the fourth segment, backwards to the anterior part of the leg on the sixth segment. The movable tubercle on the fourth segment is long, with the distal half slender. On the eighth segment is a slight hump, and a larger one on the twelfth segment. Length, 35 mm.

Food-plants.—Willow, Poplar, White Birch, Maple, Beech, Apple.

Not common; probably double brooded. The moth resembles *S. concinna*, but the wings are longer and more produced, with the outer margin more oblique. It is also larger. More information regarding the life-history is needed. The larva lives singly on the edge of a leaf.

Schizura concinna (*A. & S.*).

Fore wings pale tawny, cinereous along the costa and broadly purplish brown along the inner margin; the light part with ochereous dashes. Discal spot minute, black; base with a short black dash. Hind wings white with a blackish patch at hind angle. *Female*, almost uniform purplish brown, gradually fading

into dark cinereous towards the costa and apical region with a few black dashes. Hind wings uniform brown. Expanse, 30-33 mm.

Caterpillar.—Head deep coral red, as is also the transverse hump or elevation on the fourth segment. Body black, with four dull yellow, narrow, wavy dorsal lines and three white subdorsal lines. Sides with two dull yellow lines, below which is a white line. Under side with dull yellow broken lines. On the first three segments all the lines are broken into small spots. On the back of each segment are two long spine-like tubercles, the pair on the red hump being the longest and the following ones gradually decreasing in size towards the end of the body; the other tubercles on the segments much shorter and wart-like. Length, 30 mm.

Food-plants.—Apple, Cherry, Plum, Rose, Thorn, Pear, White Birch, Willow, Poplar, Blackberry, Huckleberry, Dog-wood, Sweet-gum, Persimmon, Bayberry, Hickory, Wistaria, Oak, and Locust.

The moth appears during the end of May and in June, and again in August. The caterpillars feed in clusters and spin their cocoons between leaves on the ground. Rather common, and double-brooded.

Seiroidonta bilineata (Packard).

PLATE XIX, FIG. 4. FEMALE.

Fore wings mouse gray, sometimes with a lighter shade; two transverse, angular, double, narrow gray brown lines, and a subterminal pale, line-like shade; fringes notched with black. Discal spot small. Sometimes the wings are suffused with black brown. Costa towards the apex sometimes streaked with black. Hind wings gray brown. Expanse, 35-40 mm.

Caterpillar.—Cylindrical, slender, with two warty elevations on the dorsum of the fourth and twelfth segments. Body green; a pale yellow dorsal line, bordered on each side of joints three and four by a purple line; outside this is a pale yellow stripe that diverges on joint two, and gradually diverging again on joints four, five and six, where it reaches below the subdorsum and extends back to joint eleven, uniting again on the last segment. These stripes send more or less prominent deflections down the sides on joints seven and ten. In some examples the space between these stripes and the dorsal line contain a pale whitish stripe on each side of the dorsal; the deflections, a little space on joint five, and the elevations are reddish purple. In other examples the whole space between the lines, except four or five greenish patches, is reddish purple. The sides are speckled with purple; stigmal line yellow. Head green, with a dark purple line each side, outside of which is a yellowish line. Length, 30 mm.

Food-plants.—Elm, Beech.

Not common and double brooded, the first brood appearing late in May and early in June, and the second brood in July and August. The larva forms a rude cocoon on the ground.

Heterocampa manteo (*Doub.*).

Fore wings ash gray, varying from light to dark gray, with three scalloped, darker, transverse lines, the scallops filled with light gray. A large discal pale gray spot containing two small black dots; costa before apex with short black dashes. Terminal edge notched with black dots. Hind wings uniform mouse color, fringes paler. Expanse, 40–50 mm.

Caterpillar.—Head dull opaque amber, with a broad lateral brown line edged with white, on each side, meeting on the vertex. Body green with a broad subdorsal and two narrow yellow lines. The sides of the first three segments dotted with reddish pink, and there is a reddish streak on the outside of the anal legs. The subdorsal lines diverge on the first segment, and on the next two segments are edged within with pinkish red lines. The space between the dorsal lines is more or less filled with pinkish red, and with a narrow yellow line along the back, beginning on the fourth segment. Body elongate, with slight traces of a hump on the last segment, otherwise smooth. Length, 35 mm.

Food-plants.—Oak, Basswood, Persimmon, Walnut, Apple, Birch, Hawthorn.

Double brooded and not common. The caterpillar is subject to variation, especially in the red markings along the back; sometimes the space between the subdorsal stripes is filled in solidly with deep red, and only interrupted by the yellow dorsal line. It spins a rude cocoon on the ground, or under the surface.

Heterocampa guttivitta (*Walker*).

PLATE XVIII, FIG. 13. FEMALE.

Fore wings whitish gray, with darker shades; the markings are like those of *H. biundata*, but the subterminal row of spots is straight, and not bent as in the latter species; hind wings gray. Expanse, 40–50 mm.

Caterpillar.—Head large with a short, lateral four-colored stripe, of black, white and pink, with the outside yellowish. Body green, finely speckled with dark red brown along the sides. Dorsal line snow white, fading into yellowish on the sides, where there is a series of fine dark red black dots; the line is widest on the fifth and sixth segments, and at the suture of the seventh and eighth segments connects by a narrow neck with the posterior division of the band, which contains a whitish line in the middle, bearing reddish dots on each side. Sides of

the tenth to twelfth segments white, including the upper part of the anal legs, which are marked with a red line. Thoracic feet green, with a black dot in the middle. Length, 35 mm.

Food-plants.—Maple, Oak, Chestnut, Beech.

Not common, and possibly double brooded. The very young caterpillar is reddish brown with nine pairs of long horns like the antlers of a deer. The first pair are much longer than the rest, each with four very long branches.

***Heterocampa biundata* Walker.**

Fore wings olive green gray, with two transverse, scolloped blackish lines and a subterminal row of dusky spots, sometimes quite conspicuous. Hind wings mouse gray. Expanse, 40–44 mm.

Caterpillar.—Head high, conical, extending on the vertex into two rounded tubercles which are blackish; sides of head reddish brown, with a white median band in front, extending over the top to the white dorsal band beginning on the first segment. Body delicate pea green, with the characteristic white dorsal band, and on the sides of the third and fourth segments is an oblique leaf brown patch. A second large leaf brown patch on the side of the sixth segment, extending forward upon the fifth, and backward, forming a larger spot on the seventh. A third oblique leaf brown patch is situated on the side of the ninth segment, edged irregularly with a reddish brown tint. The white dorsal band is broad, gradually widening and again rather suddenly decreasing and contracting to a narrow point on the hinder edge of the seventh segment, where a second white band begins, which gradually widens and becomes forked on the last four segments. It is also edged with reddish brown. Over the sides are fine concolorous dots. Thoracic feet reddish; abdominal legs reddish flesh color. Length, 35–40 mm.

Food-plants.—Maple, Yellow Birch, White Birch, Willow, Dogwood, Witch-hazel, Beech, Hickory, Cherry, etc.

Not common. The moths have been captured in May and August, which would indicate that the species is double brooded.

***Heterocampa obliqua* Packard.**

Fore wings dark gray, transverse lines obscured, varied more or less with ochreous, ferruginous and white patches. Of the patches the subapical one is most conspicuous. Discal mark black, linear. Hind wings white in the male, smoky outwardly in the female. Expanse, 40–50 mm.

Var. **trouvelotii** Pack.—In this form the white patches are absent, with the large subapical area filled with ferruginous, limited inwardly by a narrow black margin, part of which is the discal mark.

Caterpillar.—Head rounded, luteous, with a flesh-colored tint and slightly purplish; an ashy irregular stripe on each side, with scattered spots between. Body thickened in the middle, pale flesh color, marked with numerous irregular reddish pink wavy hair lines. Dorsal band reddish, bordered with yellow and enclosing a pale, almost white stripe. From the first segment the two lines unite, spreading again on the second and becoming widest apart on the fifth and sixth segments, narrowing again between the seventh and eighth segments, and again widely separated on the tenth segment. The two lozenge-shaped marks thus formed inclose two parallel median pink lines. On the end of the last segment the two lines unite to form a median leaf brown band. Sometimes the body is green, with a faint double, rather narrow dorsal line, green on joints four to six, eight and nine, and forming a green wedge-shaped patch on joints ten to twelve, edged with brown and yellow, tapering posteriorly and ending in a line on the last segment. A pale yellow stigmatal line. Length, 40 mm.

Food-plant.—Oak.

Not common. Fully grown larvæ may be found in July and August, and possibly the species is double brooded. The moth is found late in June and early in July.

Heterocampa umbrata Walker.

Fore wings pale gray, with a greenish tinge; a double basal black scolloped line at the insertion of the wings; a double scolloped black line across the basal fourth, followed by a broad, clear olive ash space. Discal mark curved, continued by a broad, oblique, black shade in the female, which is absent in the male. Across the apical fourth of the wings is a double scolloped, black line, more or less distinct, and beyond which is a subterminal row of black connected spots. Wings in female more or less clouded with black. In the female the apical area is filled with pale whitish or greenish in form of a lunate patch. Hind wings alike in both sexes, whitish gray, with a diffuse whitish median band. Expanse, 40–53 mm.

Caterpillar.—Body green, sparsely dotted with white. On the first segment are two purplish black warts. From these warts runs backward a bright brownish purple line, dividing on the middle of the third segment and reaching the subdorsum on the posterior end of the fourth segment; then running along the subdorsum to the end of the sixth segment; they there unite and cover the whole of the back of the seventh and part of the eighth segments, where it again separates and runs as two lines to the end of the ninth segment. The space on the back of segments three, four, five and six, between the purple

lines, is filled with orange. On joint four a spur is given off from the purple line to the third thoracic leg, another runs from joint six to the first abdominal leg, and there is another short spur on joint nine; both of the last with oblique lines of lighter shade. On joint nine the orange is outside the purple, extending down the lateral spurs. Joint ten has no purple nor orange, except a little below the stigmata, but it has faint subdorsal lines. Joint eleven has purple subdorsal lines which unite on the anterior part of the twelfth segment and continue backward as a broad dorsal line, darkest on anal plate. The space on joint eleven between the subdorsal is filled with orange. Feet and legs purple, but rest of under side green. Length, about 32 mm.

Food-plant.—Various kinds of Oak.

Not common and double brooded. The moth appears in May-June, and August.

Heterocampa unicolor (*Packard*).

Fore wings pale gray, often of a faded clay brown, without any lines, or lines are only very slightly indicated. Thorax tufted with clay brown on the middle at the posterior end. Hind wings almost like the fore wings in color, somewhat paler at the base, and with a dusky transverse shade. Expanse, 42-52 mm.

Caterpillar.—Head small, rounded, with no trace of warts, but slightly bilobed. Body smooth, cylindrical, with no piliferous tubercles or warts. Anal legs long and slender. Leaf green, of the hue of the leaf it feeds on; along the back is a broad whitish yellow band, edged with reddish. There are no subdorsal lines or other marks.

Food-plant.—Sycamore.

Not common and double brooded. The moth emerges late in May and early in June, and again in July and early August.

Heterocampa marthesia (*Cramer*).

PLATE XIX, FIG. I. FEMALE.

Fore wings whitish, with light green and gray shades. Across the basal third is a black, double, wavy, transverse line, before which the wings are dark gray black or almost black. Beyond this line the wings are pale or obscured with blackish marks. The double transverse, bent, scolloped line is more or less distinct, broken, and filled with whitish. A subterminal line-like shade also present, and a black dash-like mark above the hind angle. Fringes grayish, with black marks. Hind wings whitish with a paler transverse band in the male; smoky gray, with the light band, in the female. Expanse, 40-58 mm.

Caterpillar.—Large-bodied, pale green, thicker in the middle, somewhat spindle-shaped, with two tails at the end of the body. A small, double, reddish tubercle on top of the first segment, from which a median white or yellow stripe, marked here and there with red, passes back to the end of the body. Along each side are seven pairs of faint, yellowish, slender stripes, the last extending to the sides of the anal filaments or tails. Legs green. Head large with the vertex light and conical, edged irregularly with pink on each side. Length, 40-42 mm.

Food-plants.—Oak and Beech.

This species may be easily known by its light green color, with darker marks and shadings, and the caterpillar by its two anal filaments or tail-like appendages. It lives singly and forms a cocoon on the ground between leaves or under stones. Double brooded. Not common in this district.

Cerura borealis (*Boisduval*).

PLATE XIX, FIG. 9. MALE.

Head and thorax white, the latter largely blue black in the center. Fore wings white, with a very broad, gray black median band with irregular edges, and contracting about the middle. Outer blackish shade running narrowly across the wing. Space between the band shades white, with two distinct black spots on the costa, followed by two rows, each consisting of four small black spots. Outer and basal parts of wing white, the former with a terminal row of black spots and the latter with a row of four black spots and one spot near the base of the wing. Hind wings of male whitish with a small black discal spot, a terminal row of spots and a dusky patch at hind angle. In the female the hind wings are dusky. Expanse, 38-43 mm.

Caterpillar.—Head pale reddish or mahogany brown. First segment very broad, square in front on the sides, and ending in a low projection. Body pale yellowish green, with a dorsal median reddish brown band beginning at each angle on the first segment, and narrowing on the second and third segments; it begins to widen again on the fourth segment, becoming widest on the seventh and extending down each side to near the base of the abdominal legs, and contracting and becoming narrowest on the end of the tenth segment, and widening a little on the last. The red patch is sometimes more or less broken, dorsally, by the ground color. Anal plate triangular, rounded at end; tails long, brown, with three pale rings on the outer half. Thoracic feet deep red; abdominal legs pale, tips reddish. Length, 45 mm.

Food-plants.—Wild Cherry (*Prunus serotina*) and other allied plants.

Not rare ; double brooded. Fully grown caterpillars may be found in August and September and the moth in July. The caterpillar constructs an oval, flattened cocoon, mixed with bark or wood spun over a hollow in the wood bitten out by the larva.

***Cerura occidentalis* Lintner.**

Head and thorax gray, the latter with a black transverse band in front and with orange spots. Fore wings light gray, the basal broad band deeper in color edged with black and orange ; beyond the middle are two or three dentate, black transverse lines, the outer one shaded with orange, and followed by a dark gray, triangular, subapical patch. Discal spot linear, black. Base of wings in the light gray area with black spots. A terminal row of black spots. Hind wings light gray, with a terminal row of black spots. Expanse, 30-35 mm.

Caterpillar.—Shape as in *borealis*. Body bright clear green, sides spotted with purple brown. The spots around the spiracles and base of thoracic feet the largest. The back is marked with lilac or whitish, varying in shade. From the double tubercle at the end of the second segment to the head is a somewhat diamond-shaped space, broadest in front on the first segment, bordered by bright brownish with a white line. From the tubercle on the second joint to the end of the body is another whitish space, somewhat paler than the first. This space gradually expands to the base of the abdominal leg on the seventh segment and then again gradually decreases in width to the posterior end of the eleventh segment, slightly expanding and contracting again. The lilac-white of this large patch, like the first, is suffused with green on the back, and is bordered with brownish purple and white. The two patches are separated by a small green patch. Anal filaments or tails brownish purple, with somewhat greenish annulations, and a white ring near the extremity. Head dark lilac. Length, 30 mm.

Food-plants.—Different kinds of Willow and Poplar.

Double brooded, and somewhat common. The moth appears in May and June, and again in July and August. The larva is sometimes found until late in September. The larva may be distinguished by its white color along the back and the double tubercle on the end of the second segment.

***Cerura aquilonaris* Lintner.**

Fore wings white with a median transverse band, very broad and black, almost straight on the inside and scolloped on the outside, followed by three faint,

scolloped transverse lines ; subapical patch large, black. Terminal row of spots small, basal row small, four in number, and one at base of wing beneath costa. Hind wings white, with discal spot, and terminal row of black spots, but with no dusky patch at hind angle, as in *borealis*. Expanse, 40-45 mm.

Rare in this vicinity, but more common in the Northern States.

Cerura cinerea Walker.

Fore wings almost uniform gray, the median and outer transverse shade a little darker than the ground color, and not standing in contrast as in the other species of *Cerura*. The median band is marked with an orange mark, which is also present on the inside of the outer band. The transverse lines on middle part of wings are in shape of spots. Terminal row of black spots distinct ; basal ones also present. Hind wings whitish with a discal spot and a terminal row of black spots. Thorax gray, with orange marks. Expanse, 30-40 mm.

Caterpillar.—Head deep brown black. Body green with a triangular, deep brown black patch on the first and second segments, the hinder edge resting on the posterior part of the second segment. Another large patch of the same color begins on the fourth segment, gradually widens, and then suddenly contracts on the ninth segment, and forming a dumb-bell shaped patch which extends to the end of the body. Tails or filaments blackish, with two greenish annulations. The two patches are very narrowly connected by a fine blackish line on the back of the third segment. Length of body, 35 mm.

Food-plants.—Willow and Poplar.

Double brooded, from May to August. The caterpillar differs from that of *C. borealis* and *C. occidentalis* in the less connected and narrower dorsal patches and in the end of the suranal plate being squarer, that of *occidentalis* being somewhat rounder behind. The cocoon is formed on a piece of wood, and is composed of gummy silk, strengthened by small bits of wood, making it difficult to detect on the bark or wood on which it is made.

Cerura multscripta Riley.

PLATE XIX, FIG. II. FEMALE.

Fore wings pure white with many narrow, transverse, scolloped black lines, the pair across the basal fourth filled with creamy white, with fine black scales. Discal mark in form of a small black ring. The outer line is more intense for some distance beneath the costa, and again at the inner margin. Terminal

row of spots black. Veins on outer part of wings usually black. Thorax white, with transverse black bands and spots. Hind wings blackish. Expanse, male, 25 mm.; female, 30 mm.

Caterpillar.—Head with a broad black band in front on each side, extreme sides brownish. First segment narrowly edged with bright red; under the fold between the head and the segment a black spot on each side at the angles; first and second segments with a whitish triangular patch, greenish in front on the large cervical shield and with lilacine lines. Third segment with a black tubercular hump which connects with the large, elongate, diamond-shaped dorsal patch, which is whitish with green striæ and a purplish line on each side of the widest part. Both triangular patches are bordered with pale yellow. A yellow line on each side along the spiracles, bordered with red beneath. Sides of body bright green, dotted with pale yellow. Spiracles black. Anal filaments or tails bluish with black spinules. Last segment with two short spines between the tails. Abdominal legs banded outside with black. Length, 35 mm.

Food-plants.—Willow and Poplar.

This species may be known by its white fore wings with the many fine wavy transverse lines, and blackish hind wings. Double brooded. May–June and July–August.

***Thyridopteryx ephemeraformis* Haworth.**

PLATE XVII, FIG. 17. MALE.

Male.—Head, thorax and abdomen wooly, black. Wings transparent, veins black. *Female* wingless. Expanse, 20 mm.

Caterpillar.—Head dirty white, spotted with brown black. Body brown black, first three segments each with a white, transverse, plate-like band marked with black, the last one divided in the middle. Thoracic feet well developed, black, bases marked with white; remaining legs rudimentary. Body stout, and tapering towards the end. Length, 30–40 mm.

Food-plants.—Oak, Elm, Willow, Chestnut, Larch, Pine, and many other trees and plants.

This is the well-known Bag-worm, which often does considerable damage to trees and other plants. The caterpillar lives within the bag, which is made of silk and pieces of sticks, twigs or leaves outside. The female moth never leaves the bag. Double brooded.

***Psyche confederata* G. & R.**

Wings and body wholly black, without any markings whatever. Expanse, 10-12 mm.

Caterpillar.—Head, and first to third segments, pitch black; fourth segment yellowish with two black, triangular spots on each side; fifth segment whitish with two brown points; rest of body yellowish white, except the last segment, which has a triangular, brown patch above. Body rather flattened, narrowed at each end. Length, 11 mm.

Rather common locally. The larva lives in a small silken bag, similar to that of the preceding species, and fastened outside are many pieces of bark or short sticks. It lives on the bark of Oak, Chestnut and other trees. Double brooded.

***Lacosoma chiridota* Grote.**

PLATE XVII, FIG. 15. FEMALE.

Ocherous brown, fringe marked with black on the veins. A black discal spot on both wings, and an undulating, smoky brown line across each wing. This line is more or less distinct, sometimes almost absent. Expanse, 25 mm.

Caterpillar.—Head ocher yellow, heavily mottled with chestnut brown, especially along the middle in front. First segment ocher yellow with brown stripes, which are continuous on the remaining segments. The first four or five segments are pinkish, which gradually fades out along the dorsal region towards the end of the body. Sides yellowish. A dorsal line, one on each side on the subdorsum, and indications of three broken lines along the sides. Spiracles black with light centres. Under side yellowish with a brown line along the base of the thoracic feet, outside. Thoracic feet brownish and yellow inside. Head small, and the segments of the body gradually thicken towards the end of the body. Anal plate on top flat and rounded at end. Length, 23 mm.

Food-plant.—Oak.

The caterpillar constructs a flattened case, open at each end between leaves. In shape it is very much like that of the following species. Fully grown caterpillars may be found in September, and the species is probably double brooded.

***Perophora melsheimeri* Harris.**

PLATE XIX, FIG. 2. MALE.

Wings pale brownish gray, more or less tinted with pink and dotted minutely with black; across the fore wings, beyond the middle, is an oblique, narrow

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blackish line, forming an angle below the costa. Hind wings with a straight line across the middle. Expanse, 30-45 mm.

Caterpillar.—Head shining, blackish, with white bristles, and with two obsolete reddish spots on each side. First three segments blackish brown, slightly tinged with reddish, and with small tubercles, from which arise long brown hairs; segments four, five and six black, polished, and each furnished with a broad hump; segments seven, eight and nine polished white, veined with black above; tenth segment shining black, veined with white and tuberculated; eleventh segment black, with a large, flat-topped hump, studded with black tubercles. Last segment black, veined with white. An obsolete white dorsal line; thoracic feet reddish brown, marked with black; abdominal legs long, blackish, laterally white with black lines. Body beneath blackish varied with reddish. Length, 30 mm.

Food-plants.—Oak, Winterberry (*Prinos*).

The larva lives in a flattened case, open at each end. It has long appendages on the head, and the body is very narrow but gradually swells towards the end, which is provided with a corneous flat plate which is used to close up the end of the case when the larva is at rest.

***Samia cynthia* (*Drury*).**

PLATE XXI, FIG. 2. FEMALE.

Olive green, finely sprinkled with blackish scales on the outer parts of all the wings. A broad transverse pink band beyond the middle, limited inwardly, narrowly with white and black; basal bands white and black, slightly pink inwardly. Lunate mark semitransparent, and partly yellow. Apical area on fore wings purplish with a black, eye-like spot. Expanse, 100-125 mm.

Caterpillar.—Body pale green covered with a whitish, flour-like powder; tubercles bright blue with yellowish green bases; the row of tubercles along the sides black. Head and cervical shield yellowish green, also the anal plates, which are margined with blue. Thoracic feet yellowish green; abdominal legs with a bright blue patch at the base on the outer side of each. Length, 61-65 mm.

Food-plants.—Ailanthus, Hop-tree (*Ptelea*), Tulip-tree, Linden, Wild Cherry, Plum, Sycamore, Sweet-gum, Dogwood, Sassafras, Spicebush, Nannyberry, Holly, Castor-oil plant, etc.

Common everywhere, especially in the cities and towns on the Ailanthus trees, which are its native and favorite food-plant. It is partly double brooded, and the caterpillar spins an oval, compact, elongate cocoon, fastened to the twigs by a long silken band. It is an importation from China.

Platysamia cecropia (Linn.).

PLATE XXI, FIG. I. FEMALE.

Head and thorax red, collar broadly white. Abdomen red, banded with black and white. Wings blackish brown with light irrorations, each with a large crescent-shaped mark, part red and white, or white bordered with red and black, or wholly red bordered with black. Beyond the middle a black and white band broadly shaded with red outwardly. Basal band on fore wings black and white. The wings are also shaded more or less with red. Outer part of wings clay brown, light and dark, with wavy black lines. Apical patch on fore wings purplish with a large black eye-like spot. Expanse, 120-150 mm.

Caterpillar.—Bright green along sides, paler along the back. Head and feet brighter green, abdominal and anal legs with blue extremities; along each side are two rows of blue tubercles and on the back are two rows (one on each side) of yellow tubercles; the second, third and fourth segments have each two prominent bulb-like tubercles, the first two pairs coral red, and the last yellow, all beset with short black spines; eleventh segment with a large yellow tubercle on top. Spiracles blue. Length, 75 to 100 mm.

Food-plants.—Elder, Willow, Apple, Pear, Thorn, Poplar, and a variety of other plants.

Common everywhere. The caterpillar spins a large, conspicuous, double cocoon, on the branches of trees. Its favorite food seems to be the Elder, on which they thrive best. Single brooded.

Callosamia promethea (Drury).

PLATE XXII, FIGS. I AND 3. MALE AND FEMALE.

Male.—Wings black, outer border clay brown, with a fine wavy line and with black spots on hind wings. Across the wings, near the middle, is a narrow grayish, wavy line. Apical area of fore wings purplish, with a black eye-like spot.

Female.—Reddish, wings with lighter irrorations; transverse lines more prominent than in the male, and usually followed by a lighter shade. A light triangular spot on each wing. Borders of wings as in the male, but the lines and spots are reddish. Expanse, 75-100 mm.

Caterpillar.—Pale whitish green, darker along the sides. On each of the second and third segments is a pair of coral red, cone-like tubercles, with a black ring at the base and a similar single, yellow one on top of the eleventh segment. On each side are three rows of polished black dots. Length, 55 mm.

Food-plants.—Sassafras, Tulip-tree, Sweet-gum, Viburnum, Wild Cherry, etc.

Common everywhere. The caterpillar spins a cocoon attached by a long silken band to a twig.

***Callosamia angulifera* (Walker).**

PLATE XXII, FIG. 2. MALE.

Male and female similar. Markings like those of *promethea*, but the triangular spots on the wings are much larger, and conspicuous. The general color of the male is wood brown, tinged with ochreous. The female is much brighter in color, reddish and much suffused with ochreous, and with the angular spots usually larger than in the male. Expanse, 80-100 mm.

Caterpillar.—Resembles that of *promethea*, but may be readily distinguished by the lateral yellow stripe, which forms a ridge, and the less prominent tubercles on the second and third segments, and also by the smaller black dots, which in some individuals are quite obsolete. It is also stouter, and more tapering towards the end of the body. Length, 60-65 mm.

Food-plants.—Tulip-tree, Sassafras, Wild Cherry.

The caterpillar spins its cocoon on the tree, and it drops off with the falling leaves in autumn; sometimes the cocoon is fastened to a twig by means of a silken band. The cocoons should be looked for on the ground under Tulip-trees, which is the favorite food of the caterpillar.

***Telea polyphemus* (Cramer).**

PLATE XXIII, FIG. 2. MALE.

Wings ochreous brown, varying from light to dark, and sometimes with a reddish tinge. Costa of fore wings and collar gray. Basal transverse band on fore wings dislocated, reddish outside and whitish inside. Outer band lilac, as is also the one on the hind wings, and marked with black inside. On the fore wings is an oval, transparent, glass-like spot, bordered with yellow, those on the hind wings in a large black, oval, eye-like patch, clouded with blue. Expanse, 100-125 mm.

Caterpillar.—Head purplish brown. Body stout, bright green, with three rows of scarlet tubercles, metallic or pearly on each side, from each of which

arise two or three bristles. On each side is a narrow, yellow, oblique stripe, extending from the fifth to eleventh segments, connecting the lateral with the subdorsal row of tubercles. Anal plate bordered with purple. Spiracles red. Thoracic feet ochre brown.

Food-plants.—Oak, Elm, Willow, Poplar, Walnut, Hickory, Chestnut, Beech, Linden, Maple, Hazel, Rose, Quince, Apple, Pear, Birch, Cherry, etc.

Common everywhere, and single brooded. The caterpillar forms an oval cocoon, closed at each end. It is dense, compact, and generally fastened to a leaf or leaves, with which it falls to the ground, though often it is fastened to the twig. The caterpillar resembles that of *A. luna*, but may be easily distinguished from it by the metallic tubercles.

Actias luna (Linn.).

PLATE XXIII, FIG. 1. MALE.

Bright pale green, fringe sometimes reddish or yellow. Costa of fore wings with purplish, this color being continuous with the band of the same color on the thorax. Each wing with a rounded yellow spot marked with white, black, and sometimes with red, and transparent centrally. Expanse, 75–100 mm.

Caterpillar.—Head purplish, sometimes tinged with greenish. Body bright yellow green, somewhat dark at sides and beneath. Along each side is a narrow yellow line beneath the spiracles, and a transverse yellow line on the hind edge of the fourth to tenth segments inclusive. On each side are three rows of bright red tubercles, each with a few bristles. Spiracles deep reddish brown. The whole body is sparsely covered with evenly cut, short, yellowish hairs. Length, about 60 mm.

Food-plants.—Sweet-gum, Hickory, Walnut, Butternut, Birch, etc.

This beautiful species is rather common everywhere in this vicinity. It is double brooded, and sometimes partly three brooded. The moth appears in April and May, and the second brood in July. The cocoon is oval, thin, and closed at each end, and is spun between leaves on the ground. The favorite food of the caterpillar is walnut and sweet-gum.

Automeris io (*Fabr.*).

PLATE XX, FIG. 1. MALE.

Male.—Body and wings bright yellow. Fore wings with two or three more or less distinct wavy transverse, scalloped shades, and a patch about the middle. Hind wings with a large eye-like black spot, whitish centrally; a round black line, followed by a reddish one, the inner part of which is heavily scaled with reddish. Expanse, 60–70 mm.

Female.—Fore wings purplish brown with the transverse lines whitish, and the patch on the middle composed of raised scales surrounded with white. Expanse, 70–80 mm.

Caterpillar.—Body pea green, with a distinct white line edged above with lilac or red, below the spiracles. Spiracles yellow with brown rings. The body is covered with bunches of long, stinging spines, some of which are branched, giving the creature a spiny appearance. Length, 50 mm.

Food-plants.—Willow, Elm, Maple, Sassafras, Apple, Pear, Currant, Clover, Locust, Ash, Poplar, Dogwood, Cherry, Cotton, Corn, Birch, and many other plants.

Common everywhere. The eggs are laid in masses, and the young larvæ live socially, but scatter as they grow older; they spin a tough, but rather thin cocoon on the ground under stones, wood or leaves. Single brooded. The moth appears early in July.

Hemileuca maia (*Drury*).

PLATE XX, FIG. 2. MALE.

Thorax black, tufted with white; abdomen black, anal part orange in the male, scaled with white in the female, and the thorax has two red tufts behind. Wings black, each with a yellowish transverse band, that on the hind wings broadest, and containing a black mark; fore wings with a linear, white, discal mark. Expanse, 50–75 mm.

Caterpillar.—Brown black, with numerous white irrorations or small rounded dots, and with three rows of spines on each side; those on the dorsum consist of bunches of spines, except those on the first and second segments, which are long spines with branches. The two rows on each side are somewhat longer, and have short black bristly branches. Head, cervical shield, thoracic feet and anal plates mahogany red. Abdominal legs similarly colored. Length, 60 mm.

Food-plants.—Various kinds of Oak.

The moth appears late in September and early in October, and deposits her eggs in regular rows around the twig of a plant. The eggs hatch during the latter part of May the following year. The caterpillar pupates in moss, under leaves, or partly enters the earth. The caterpillars live socially.

Anisota stigma (*A. ♂ S.*).

PLATE XX, FIG. 4. MALE.

Bright ochereous brown with a slight purplish tinge. Fore wings with many blackish dots, an oblique purplish line from the apex to the middle of the inner margin, and one across the basal part, which is more or less distinct or absent. A rather large white discal spot. Hind wings with only a few dots and a purplish transverse band. Male and female similar in color and markings. Expanse, 40–60 mm.

Caterpillar.—Head ocher yellow. Body light leather brown, dotted over with white granules; a narrow dusky dorsal line and a wider one on each side along the spiracles; on each side are three rows of black spines and a long movable spine on each side of the second segment. Spiracles black. Length, 55 mm.

Food-plants.—Oak, Chestnut, Hazel.

Rather common everywhere in this vicinity. The moth emerges early in July, and is single brooded. The caterpillars live in colonies, and may be found fully grown late in August and early in September. They enter the ground to pupate.

Anisota senatoria (*A. ♂ S.*).

PLATE XX, FIG. 3. MALE.

Male.—Wings ochereous brown, sometimes with a purplish tinge; fore wings semitransparent in the middle. A conspicuous white, round discal spot and a dark oblique line, from a little before the apex across the wing, parallel with the outer margin. Hind wings opaque. Expanse, 30–38 mm.

Female.—Very dissimilar from the male. It is very much like *stigma*, but is very much paler in color, and usually less spotted. Expanse, 45–60 mm.

Caterpillar.—Head jet black. Body dull black, with four dull orange stripes along each side, and traces of a fifth stripe along the base of the legs; all the stripes run to the end of the eleventh segment; last segment black. Under side with a broad yellow stripe along the middle. On each side of the second

segment is a slender, long, slightly curved horn, and along each side of the body three rows of short spines. Length, 45 mm.

Food-plants.—Oak, Chestnut.

Common, and often quite injurious to oaks, which is the favorite food of the caterpillars. They live in large swarms, and sometimes defoliate the entire tree. The insect is single brooded, and the moth is found early in July.

***Anisota virginiensis* (Drury).**

Male.—Similar to *senatoria*. Purplish brown, fore wings largely transparent, much more so than in *senatoria*, and this part breaking the oblique, transverse line. Hind wings opaque, with an ill-defined, darker transverse line. Discal spot round, white. Expanse, 30-35 mm.

Female.—Wings opaque, ochreous brown, without dots; outer part beyond the line purplish, as is also the base before the basal line. Hind wings with outer part purplish. Discal spot large and conspicuous. Expanse, 45-55 mm.

Caterpillar.—Body obscure green with a subdorsal purplish red stripe, and another on each side below the spiracles; on each side are three rows of black spines, and two long, black movable horns on the second segment. Body also covered with white granules, and sometimes blackish instead of green. Head dull greenish or brownish yellow. Length, 50 mm.

Food-plants.—Different kinds of Oak.

Not as common as *stigma* and *senatoria*. The moth comes first during the latter part of June, and the caterpillars live in clusters and are fully grown about the middle of August. It is single brooded, and the caterpillars enter the earth to form their pupæ.

***Anisota rubicunda* (Fabr.).**

Body pale yellow, legs rose colored. Fore wings with the outer and basal parts largely rose colored, leaving a triangular yellow space about the middle. Hind wings yellow, washed with rose outwardly. Expanse, 40-55 mm.

Caterpillar.—Light green with longitudinal stripes of darker green. Spines very short, the row beneath the spiracles and those on the last two segments longest. Along the sides is a rose red stripe, sometimes only present on the

last few segments. On the second segment are two long black horns. Head ochreous brown. Length, 45 mm.

Food-plants.—Maple and Oak.

This beautiful insect may be easily known by its rose colored and yellow wings. It is quite common, and the caterpillar lives socially, usually on Red Maple (*Acer rubrum*), which is its favorite food. It rarely feeds on Oak.

Citheronia regalis (*Fabr.*).

PLATE XX, FIG. 6. MALE.

Head and thorax bright red above, with a double yellow edge on the collar, and two divergent lines of the same color on the thorax. Anterior edges of abdomen yellow. Fore wings slaty gray, veins broadly marked with red. Spots yellow. Hind wings largely red marked with yellow, and sometimes with slaty gray dashes between the veins. Expanse, 100–145 mm.

Var. **infernalis** *Strecker*.—Head, thorax and abdomen entirely red. Fore wings slaty gray, veins marked with red. A subapical red patch and a smaller one at base of wings.

Var. **sængerii** *Neum.*—Body and markings on wings entirely yellow instead of red.

Caterpillar.—Head orange. Body green, smooth, paler along the back. On the first segment are two orange and four black horns with yellow bases, all short and spined; on each of the second and third segments are four very long and prominent spined horns, and a shorter one outside of each, orange, tipped with black. Along each side of the remaining segments are three rows of short-spined horns and a rather long one on the back of the eleventh segment. Anal plates orange, as are also the thoracic feet. Along each side of the body are oblique black and white band-like dashes, and between the second and third segments is a transverse black mark and a much narrower one between the third and fourth segments. Sometimes the body is black with the oblique bands obscure, ferruginous. Length, about 125 mm.

Food-plants.—Walnut, Butternut, Hickory, Sumac, Sycamore, Persimmon, Sweet-gum, Ash.

The moth is commonly known as the ‘Regal Walnut Moth,’ and the caterpillar as the ‘Hickory Horned Devil,’ so called from its ferocious aspect produced by the very long spiny horns. The moth comes out in June and early in July, and the larva may be found fully developed in August. Enters the ground to pupate, and is single brooded.

Eacles imperialis (*Drury*).

PLATE XX, FIG. 5. MALE.

Bright yellow with chocolate colored markings, and sprinkled with black dots on the wings. The female is less marked with chocolate, and as a rule is more heavily sprinkled with black dots. Expanse, 85-135 mm.

Var. **punctatissima** *Neum.*—Wings very heavily covered with black dots, giving them a very black appearance.

Var. **nobilis** *Neum.*—Almost or entirely chocolate colored.

Caterpillar.—Very variable in color, from light creamy brown to ferruginous or black, but usually green, with four short spiny horns on the second and third segments and a shorter one on each side of them. On each side are three rows of short yellow spines, those along the back being longest, the others much reduced. On the middle of eleventh segment a short, spiny horn. Anal plates black, spotted and bordered with yellow. Head yellow with a double black line in front and a short one on each side. Length, about 90 mm.

Food-plants.—Pine, Spruce, Hemlock, Oak, Elm, Hickory, Sycamore, Sweet-gum, Sumac, Maple, Beech, Chestnut, Sassafras, Birch, Alder, Cherry.

Common everywhere, but especially so in the city parks. The variety *nobilis* is found in Texas, and the variety *punctatissima* is an aberration, probably produced by cold. It is single brooded, and the caterpillar enters the ground to pupate.

Clisiocampa americana (*Fabr.*).

PLATE XIX, FIG. 13. MALE.

Cinnamon brown. On the fore wings are two whitish, oblique transverse lines with the space between them often dusted with white. Fringes marked with whitish. Hind wings uniform cinnamon brown, fringes marked with whitish. Expanse, 28-42 mm.

Caterpillar.—Head velvety black. Body with a rather broad bluish white dorsal stripe followed by fine orange, wavy striæ on a velvety black ground, broken by a row of rather large spots, containing blue spots and marks; lateral parts blue, irrorated with minute black dots. Under side black, irrorated with white; over the body are scattered, rather thickly, sordid white hairs. Neck creamy white. Length, 50 mm.

Food-plants.—Cherry, Apple, Pear, Plum.

Common everywhere, especially in orchards, where the caterpillars often strip the apple trees of their leaves. The eggs are laid late in June and early in July around a twig, and are covered with a gummy substance; they do not hatch until the following April. The caterpillars construct a large silken tent in the forks of branches, and come forth at night to feed. They spin an oblong, white, silken cocoon.

Clisiocampa distria (*Hübner*).

Pale ochreous brown, the female paler; fore wings with two dark brown, oblique bands; fringes marked with white. Hind wings crossed by a darker shade-like band. Expanse, 18-35 mm.

Var. *sylvatica* *Harris*.—In this variety the space between the lines on the fore wings is uniformly filled with brown.

Var. *thoracicoides* *N. & D.*.—The lines in this variety are very obscure.

Caterpillar.—Head slaty black. Body velvety black along the dorsal region, irregularly sprinkled with blue and with a row of creamy white spots along the back; then a narrow orange subdorsal line, followed by a broad blue space, sprinkled minutely with black, and a lateral orange and black line, beneath which the body is slaty gray to the base of legs. Under side blackish. Hairs along the sides grayish. Length, 55 mm.

Food-plants.—Apple, Pear, June-berry, Plum, Cherry, Ash, Oak, Beech, Poplar, Walnut, Hornbeam, Hickory.

The eggs are laid around a twig, and are not covered with a gummy substance as in *C. americana*. They are laid late in June and early in July, and hatch the following April. The caterpillars do not spin a tent like *americana*, but when at rest they sit side by side on a branch or the trunk of the tree. It spins an oblong, white cocoon.

Gastropacha americana (*Harris*).

PLATE XIX, FIG. 3. FEMALE.

Rusty brown, covered with whitish scales and shades, giving it a frosty appearance; two transverse lines on the fore wings, and indications of one on the hind wing. Expanse, 35-45 mm.

Var. *ferruginea* *Pack*.—Almost or quite uniform rusty brown, with the transverse lines present.

Caterpillar.—Body slate gray, mottled with black, beneath flattened and greenish; on the sides beneath the spiracles, a series of tufts of reddish hairs; on the junction of the second and third segments, a bright scarlet band, divided by a black line, and black at each end, only to be seen when the larva is in motion; on the first segment are two small tubercles on each side and one on each side of the following segments; from the tubercles arise tufts of gray hairs mixed with white ones, which are club-shaped at the tips; lateral fringes with many white hairs. Thoracic feet black; abdominal legs gray, with a black spot between each pair. Head ashen gray. Length, 50 mm.

Food-plants.—Apple, Birch, Poplar, Maple.

The moth comes forth in May and again in July, and the larva may be found from June until late in September. It spins a slight cocoon between leaves. The moth when at rest mimics a dead leaf. The variety *ferruginea* is the second brood.

Arctace punctistriga *Walker.*

PLATE XIX, FIG. 5.

Fore wings pure white with three rows of black dots, those on the costa being the largest, and a row of spots on the outer border. Hind wings and body white. Expanse, 30–45 mm.

Caterpillar.—Resembles that of *Tolype vellea* but is more yellow, with the anterior segments somewhat reddish. The transverse mark on the third segment is orange instead of black.

Food-plants.—Oak, Wild-cherry, Peach.

Very rare in this neighborhood; only a few specimens have been found. It is more common in the Southern States.

Tolype vellea (*Stoll.*).

PLATE XVII, FIG. 6. FEMALE.

Head and thorax white, the latter with an elongate, triangular brown patch, composed of loose, fluffy scales. Abdomen grayish above, white beneath. Fore wings gray, with two transverse, curved basal lines, a double slightly wavy oblique band, and a double one on the outer part; veins white; fringes white, with a row of gray spots. Hind wings grayish, margin narrowly lined with white, preceded by a whitish shade-like band. Expanse, 35–58 mm.

Caterpillar.—Body dull rusty gray, flattened beneath, rounded above; sides of segments produced into a long, blunt tubercle, from which spring out a

series of very long, light gray and a few black hairs, like a fan. On the third segment is a velvety black transverse black mark, and on the back are two rows of short warts, those on the third segment largest. Under side reddish flesh color, with a black spot between the legs. Length, 60 mm.

Food-plants.—Cherry, Poplar, Elm, Lilac, Oak.

Double brooded, and not common. The caterpillar, when at rest, is closely appressed to the limb, which it resembles very much in color.

***Tolyte laricis* (Fitch).**

Male.—Black, head and fore legs white. Fore wings black, with three narrow, whitish transverse lines, the two outer ones wavy; outer margin and tips of fringes sometimes with a very narrow whitish line. Hind wings uniform black or with the fringes narrowly pale edged. Expanse, 26–28 mm.

Female.—Head and thorax white, the latter with a patch of raised, brown scales along the middle. Abdomen whitish. Fore wings gray with a double basal white band; a wavy double band across the middle, and a single outer one; space between the basal and middle bands whitish gray, sometimes white and obscuring the bands; the space between the two outer bands dark gray. Fringes cut with white. Hind wings smoky gray, narrowly lined with white at the base of fringe, and sometimes preceded by a lighter shade-like band. Expanse, 35–44 mm.

Caterpillar.—Shape of *T. velleda*, but much paler in color. Dull umber brown, extremities ashen gray, and a tinge of this color on the fifth segment. Tubercles minute, those upon the ninth segment larger and of a paler color, with a small yellow spot in front of their bases. Hairs along the sides white. Length, 35 mm.

Food-plant.—Larch (*Larix americana*).

Rare in this vicinity, but more common northward. The moth appears in May and again in July. Allied to *T. velleda*, but smaller, with a middle band much more wavy; the female is also whiter, while the male is smoky black.

***Zeuzera pyrina* (Fabr.).**

PLATE XX, FIG. 8. MALE.

Wings white, with numerous blue black spots, those on the hind wings smaller; thorax with six prominent blue black spots. Female larger and much heavier than the male. Expanse, male, 35–50 mm.; female, 60–70 mm.

Caterpillar.—Head black. Body yellowish white, with a large blackish cervical shield and with black piliferous spots, each bearing a short hair; anal plates marked with black. Length, 45–50 mm.

Food-plants.—Elm, Maple, Ash, Poplar, Willow, Oak, Hackberry, Sweetgum, Linden, Apple, Pear, etc. (boring in branches).

Very common in the immediate vicinity of New York City, especially in the parks, where the caterpillar does much harm to the trees. The species is an importation from Europe, and made its appearance here about 1887. The caterpillar lives in the trunk or branch for two or three years before it reaches maturity.

***Cossus centerensis* Lintner.**

Body blackish with whitish scales on the thorax. Fore wings with basal two-thirds blackish, outer third grayish, crossed by numerous black reticulations. Hind wings semitranslucent, with slight indications of reticulations. Expanse, 50–60 mm.

Caterpillar.—Body pale flesh color, with a dark dorsal line; on top of segments two and three is a dark spot; on each side of each segment above the spiracles are three brown piliferous spots arranged in the form of a triangle; spiracles reddish; cervical shield blackish brown, edged with dull yellow. Head dark reddish brown, slightly roughened; a few hairs on the face; jaws black. Length, 50 mm.

Food-plants.—Lives in trunks of poplar, and possibly also other trees.

Very rare in this vicinity, and only a few examples have been taken. The moth is found early in June.

***Cossus macmurtrei* Guérin.**

Male.—Very small. Wings semitransparent gray, with fine, black, transverse reticulations. Hind wings semitransparent gray, with a narrow black border, broader on the inner margin. Expanse, 35 mm.

Female.—Very large. Fore wings gray, semitransparent, with numerous black transverse reticulations, darker and heavier on the costa. Hind wings without reticulations. Expanse, 60 mm.

Very rare in this vicinity. The larva is unknown. It bores in trunks of oak trees.

Prionoxystus robiniaë (*Peck*).

Male.—Head, collar and patagia black, remaining part of thorax finely dotted with gray. Fore wings grayish, very densely reticulated with black, forming a broad irregular black band across the middle, and also sometimes another from the apex downward; this outer one is more or less indistinct, the outlines of the band irregularly defined. Hind wings golden yellow, basal half and margins black. Expanse, 50–60 mm.

Female.—Much heavier than the male. Fore wings usually grayer with the reticulations more distinct and the black diffuse bands very often reduced to patches. Hind wings gray black, with indications of darker reticulations. Expanse, 70–80 mm.

Caterpillar.—Body whitish, usually tinged with pink; sometimes a reddish pink band on the anterior part of each segment, except the third or fourth and the last one. Second and third segments with a transverse brown, corneous patch on top. On each side above the spiracles are three pink or brown piliferous spots. Head chestnut, paler in front, mouth parts pitchy. Length, 60 mm.

Food-plants.—Bores in trunks of Locust, Willow, Oak, Chestnut, etc.

Very common. The larva lives in the trunk about three years before coming to maturity. The moth comes out late in June and early in July.

Hepialus argenteomaculatus *Harris*.

PLATE XX, FIG. 7. MALE.

Male.—Fore wings sable brown, with a deeper brown band from the base of the costa to the middle of the inner margin, and two rather prominent tooth-like projections, each containing a silvery white spot; another slightly curved band runs obliquely from beneath the costa to the inner margin, and connected with this at the ends is another band on the outer margin; about the middle of the wing is an oblong mark, sometimes touching the costa, and often containing a silvery white spot; on the costa before the apex is a hook-like mark, and also two or three other marks. All the bands and marks narrowly bordered with a paler color. Hind wings sable brown with a few marks at the apex. Expanse, about 75 mm.

Female.—Usually pinkish, with the markings ochereous.

Caterpillar.—Head light yellowish brown above, black at the mouth parts. Body white, with rows of black piliferous spots. Second and third segments paler than the head. Legs yellowish. Length, 30 mm.

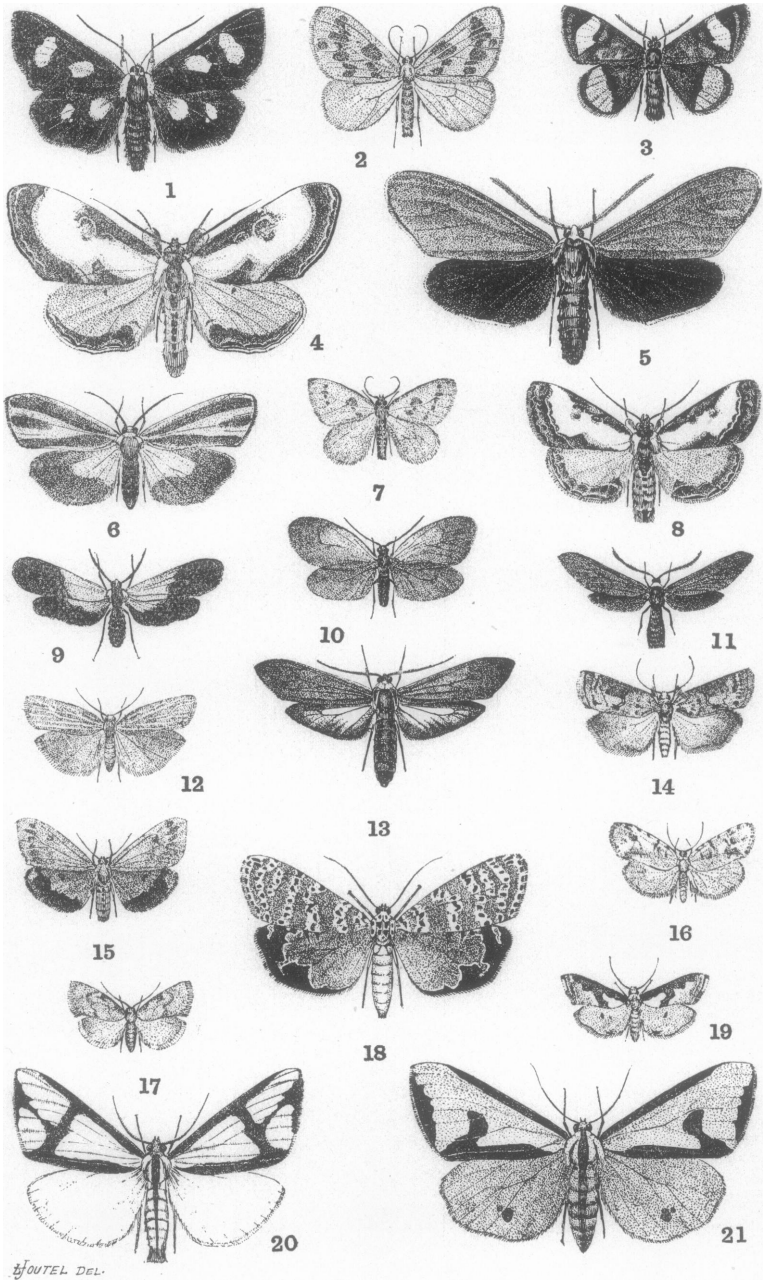
Food-plant.—Lives in roots of Alder.

This is a variable species, the spots and markings being more or less broken. The moth emerges early in June and the caterpillar lives two years in the roots; as the third year advances it works upwards more or less into the stems. In the spring of the third year it bores out to the surface, partially or loosely plugging the opening with chips, and transforms.

Hepialus auratus Grote.

Yellowish brown with a metallic brassy lustre, and whitish ill-defined marks appearing most strongly on the two parallel transverse bands, a transverse posterior line and a subterminal one, the latter marked subapically with two or three silvery white triangular spots. Expanse, 48 mm.

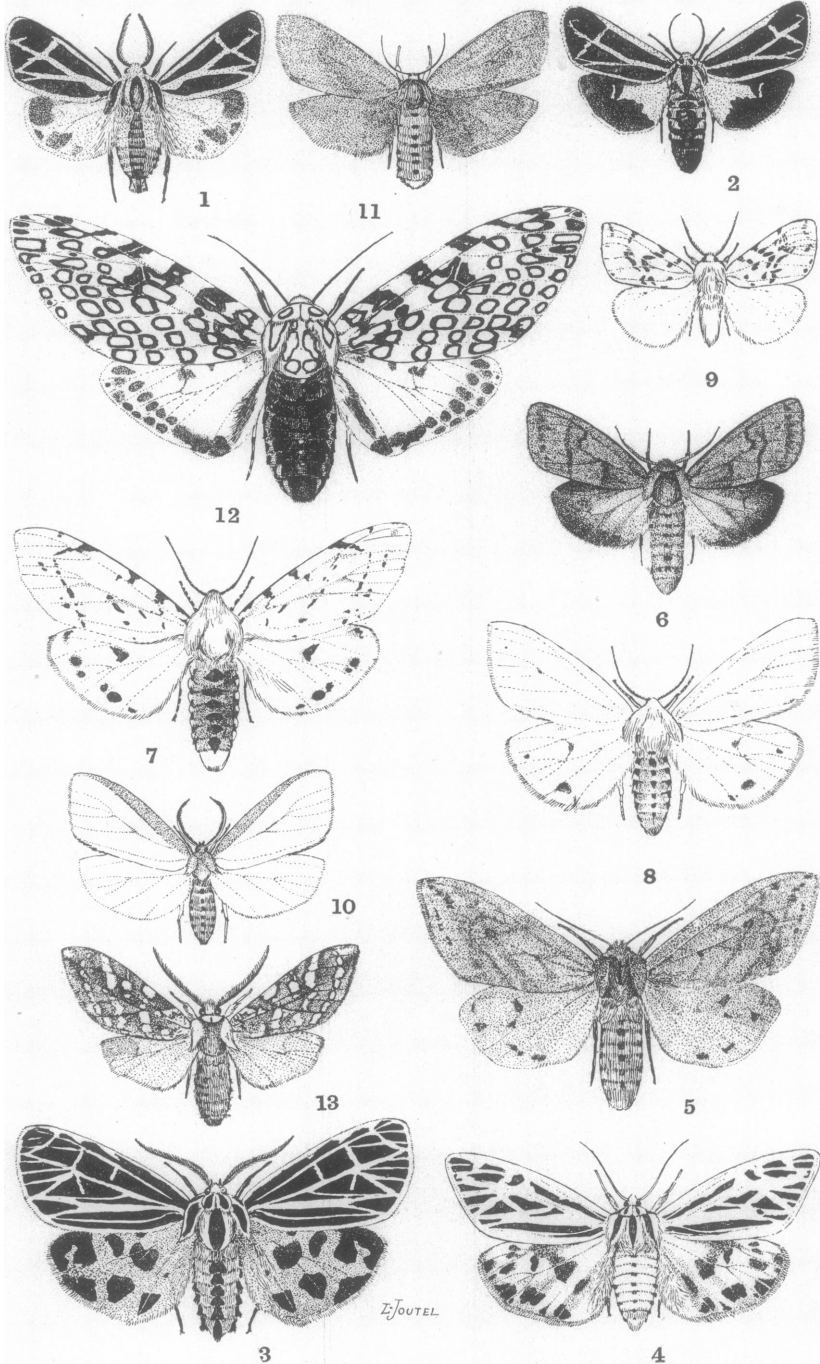
Exceedingly rare in this vicinity. It has been recorded from Newark, New Jersey, and also from New York and New Hampshire.



1. *Alypia octomaculata*.
2. *Euphanessa mendica*.
3. *Psychomorpha epemenis*.
4. *Eudryas grata*.
5. *Ctenucha virginica*.
6. *Hypoprepia miniata*.
7. *Euphanessa meridiana*.

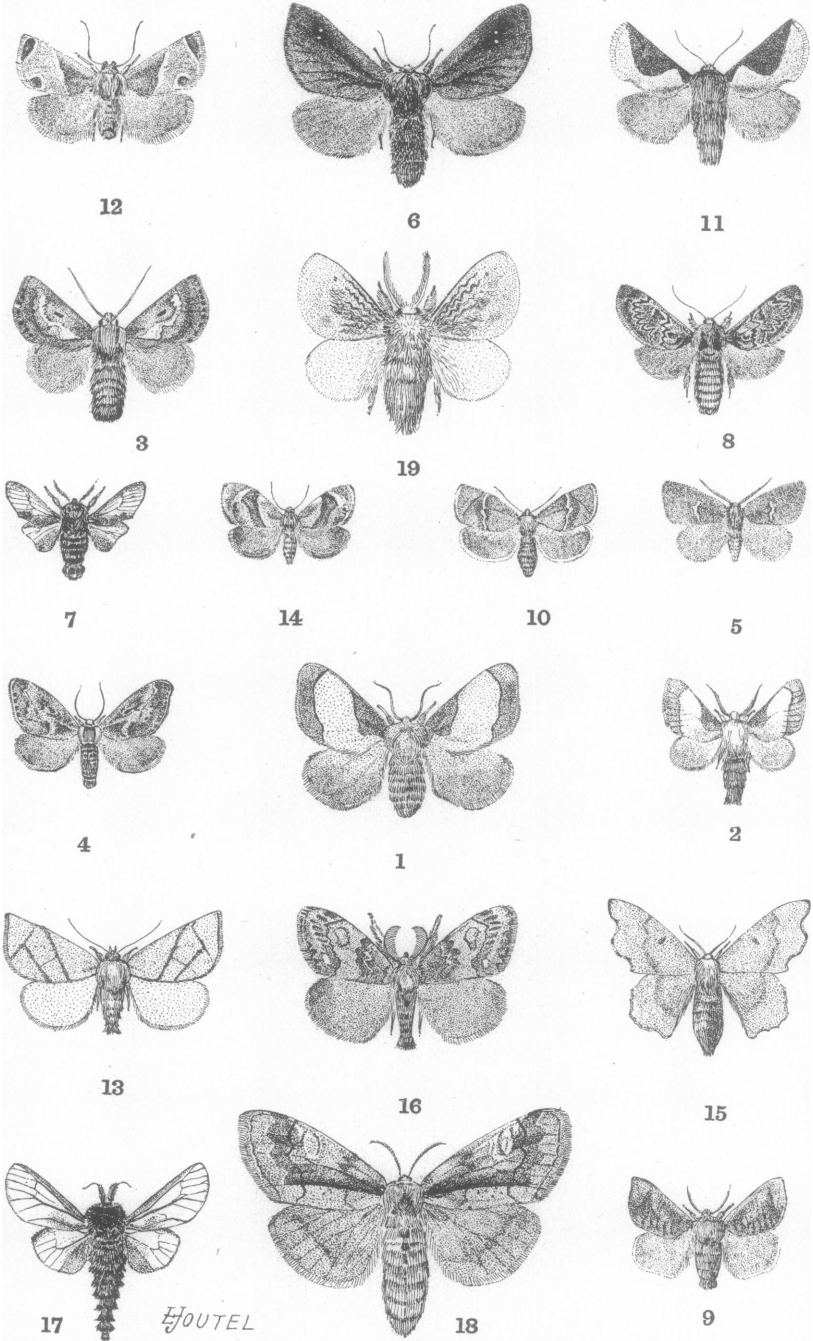
8. *Eudryas unio*.
9. *Lycomorpha pholus*.
10. *Pyromorpha dimidiata*.
11. *Harrisina americana*.
12. *Crambidia pallida*.
13. *Scepsis fulvicollis*.
14. *Nycteola lintneriana*.

15. *Eubaphe aurantiaca* var.
16. *Clemensia albata*.
17. *Nola trinotata*.
18. *Utetheisa bella*.
19. *Nola melanopa*.
20. *Haploa contigua*.
21. *Haploa clymene*.

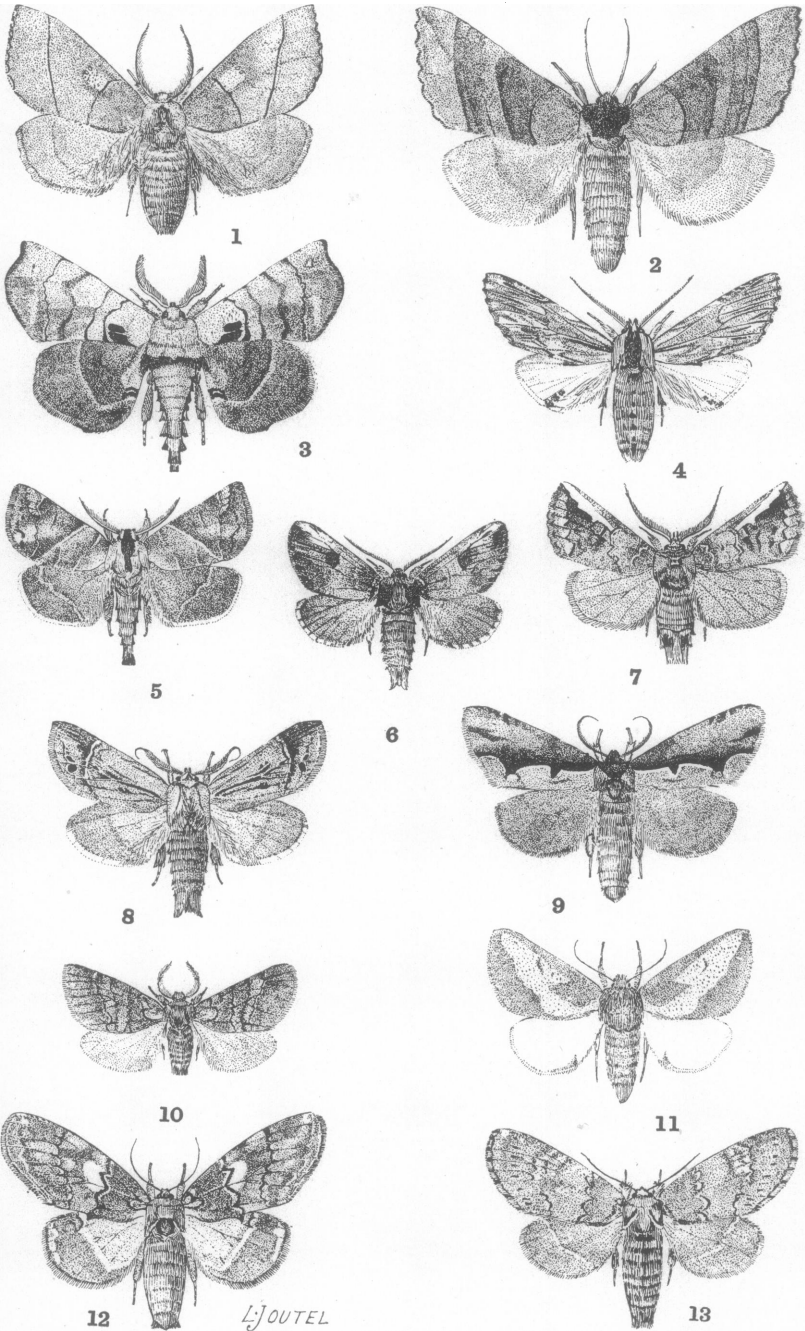


1. *Arctia nais*.
 2. " *vittata* var. *phalerata*.
 3. " *virgo*.
 4. " *arge*.
 5. *Pyrrharctia isabella*.
 6. *Phragmatobia fuliginosa*.

7. *Leucarctia acraea*.
 8. *Spilosoma virginica*.
 9. *Hyphantria cunea*.
 10. *Cycnia tenera*.
 11. " *egle*.
 12. *Epantheria ocularia*.



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|------------------------------------|---------------------------------------|--|
| 1. <i>Fuclea indetermina.</i> | 7. <i>Phobetron pitheceum</i> (male). | 13. <i>Aboda y-inversa.</i> |
| 2. <i>Parasa chloris.</i> | 8. " " (female). | 14. <i>Packardia elegans.</i> |
| 3. <i>Euclaea delphinii</i> , var. | 9. <i>Sisyrosea textula.</i> | 15. <i>Lacosoma chiridota.</i> |
| 4. <i>Adoneta spinuloides.</i> | 10. <i>Lithacodes fasciola.</i> | 16. <i>Notolophus leucostigma.</i> |
| 5. <i>Monoleuca semifascia.</i> | 11. <i>Apoda scapha.</i> | 17. <i>Thyridopteryx ephermeræformis.</i> |
| 6. <i>Sibine stimulea.</i> | 12. " <i>biguttata.</i> | 18. <i>Olene achatina</i> var. <i>parallela.</i> |

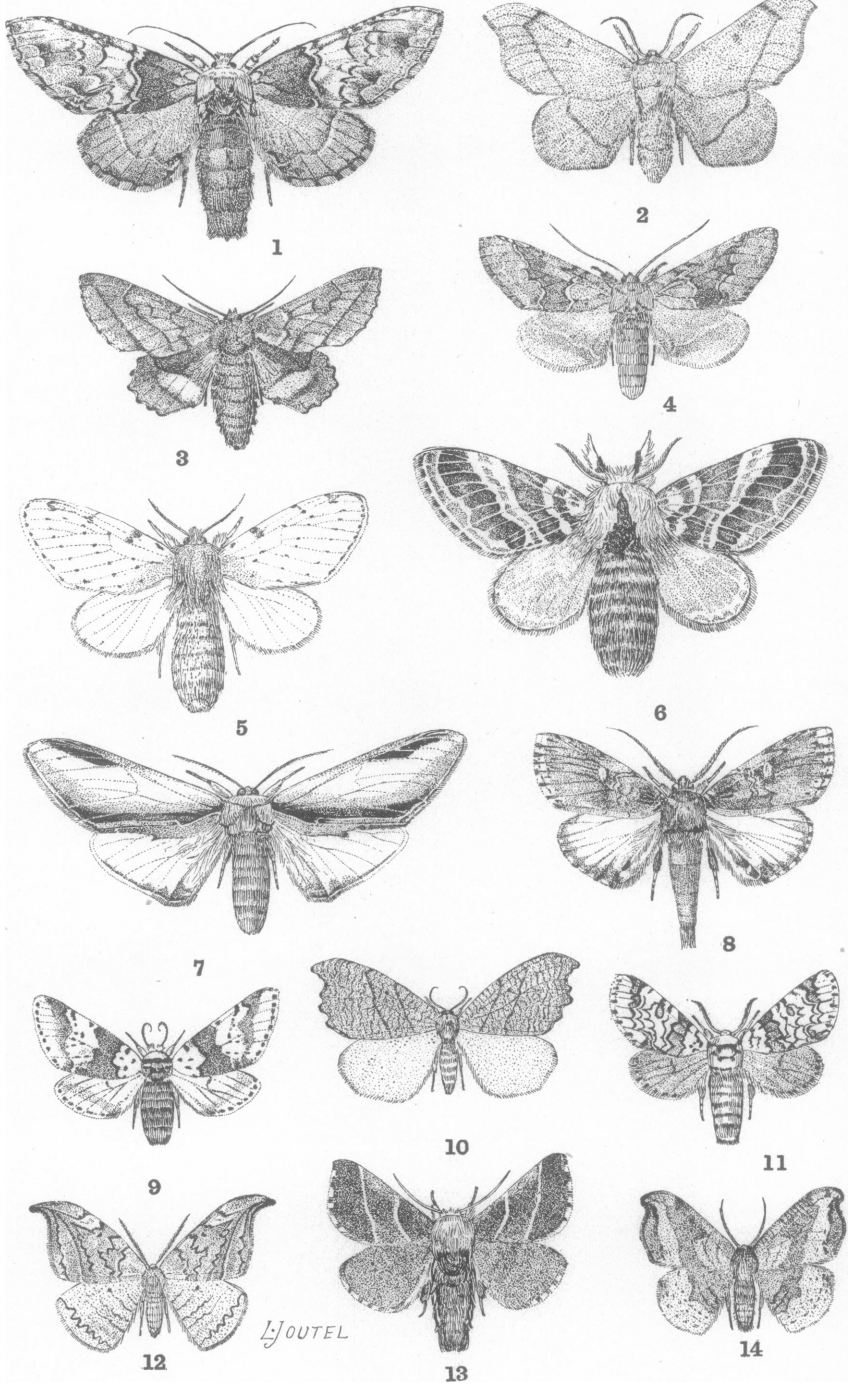


- 1. *Nadata gibbosa*.
- 2. *Datana ministra*.
- 3. *Apateles torrefacta*.
- 4. *Ianassa lignicolor*.
- 5. *Melalopha inclusa*.

- 6. *Schizura badia*.
- 7. *Symmerista albifrons*.
- 8. *Dasylophia anguina*.
- 9. *Nerice bidentata*.

- 10. *Gluphisia septentrionalis*.
- 11. *Hyarpax aurora*.
- 12. *Lophodonta angulosa*.
- 13. *Heterocampa guttivitta*.

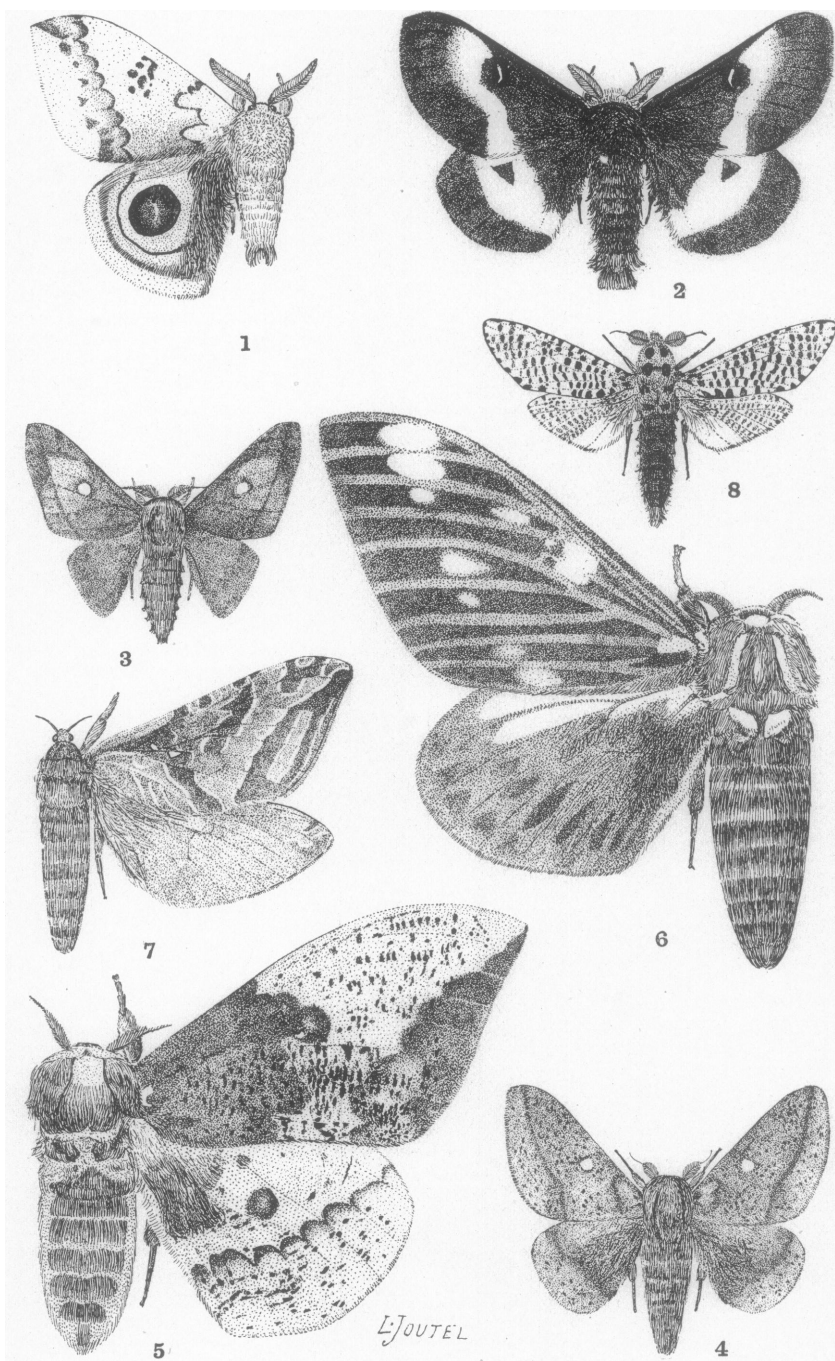
L'JOUTEL



1. *Heterocampa marthesia*.
2. *Cicinnus melsheimeri*.
3. *Gastropacha americana*.
4. *Seirodonta bilineata*.
5. *Arctace punctistriga*.

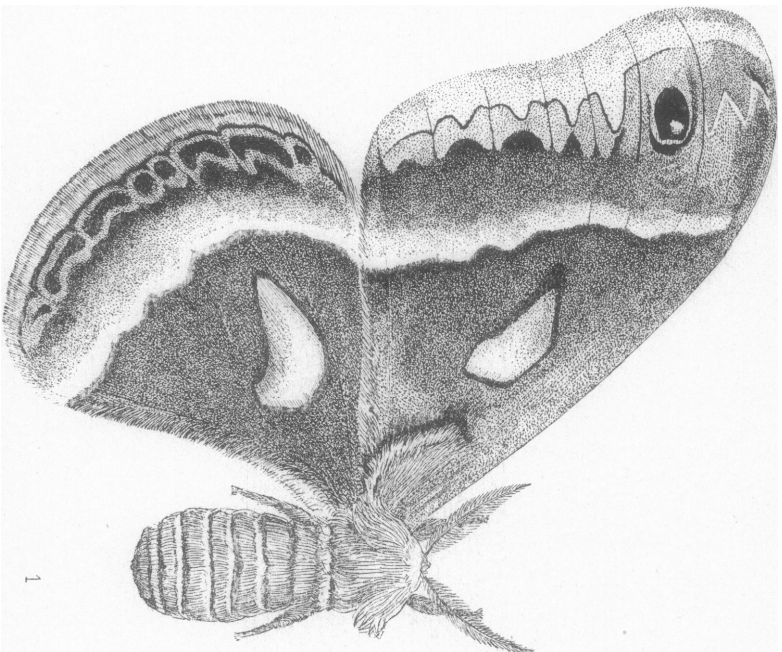
6. *Tolype velleda*.
7. *Pheosia dimidiata*.
8. *Schizura ipomœæ*.
9. *Cerura borealis*.
10. *Falcaria bilineata*.

11. *Cerura multiscrita*.
12. *Platypteryx arcuata*.
13. *Clisiocampa americana*.
14. *Oreta rosea*.

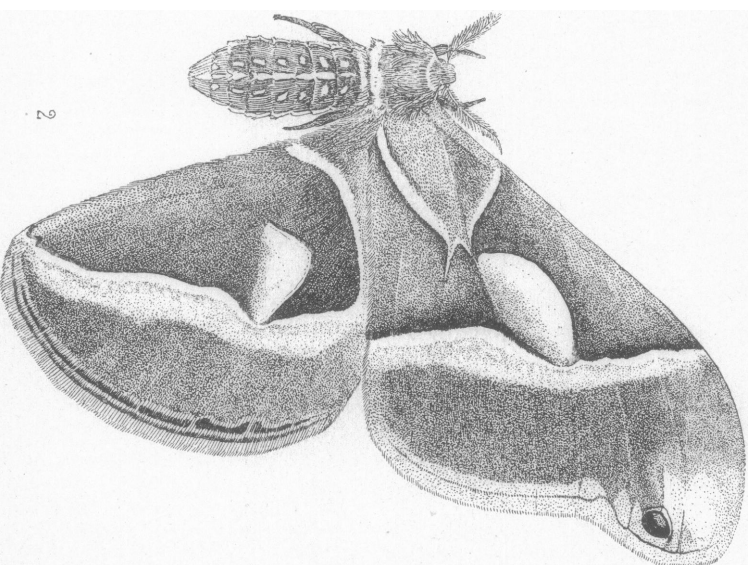


1. *Automeris io* (male).
2. *Hemileuca maia*.
3. *Anisota senatoria* (male).
4. " *stigma* (male.)

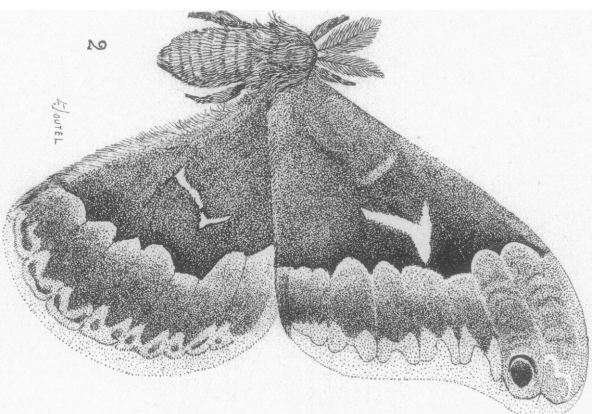
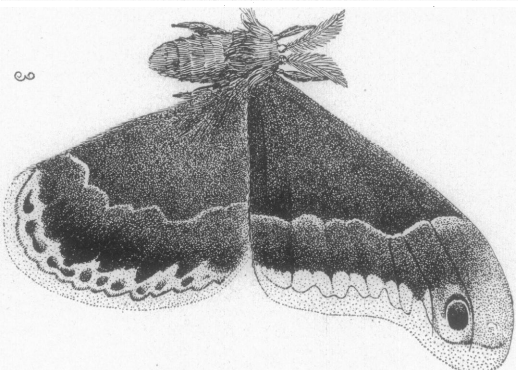
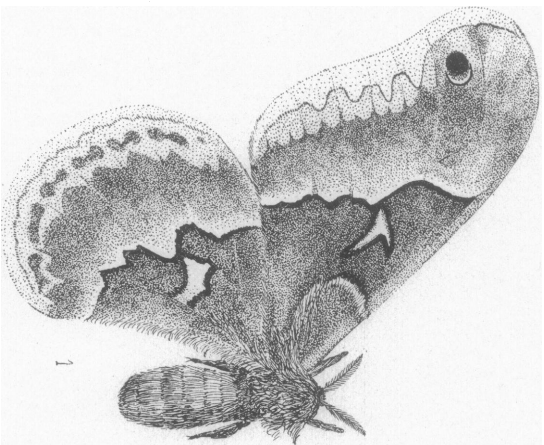
5. *Eacles imperialis*.
6. *Citheronia regalis*.
7. *Hepialus argenteomaculatus*.
8. *Zeuzera pyrina*.



1. *Platsyamia cecropia*.



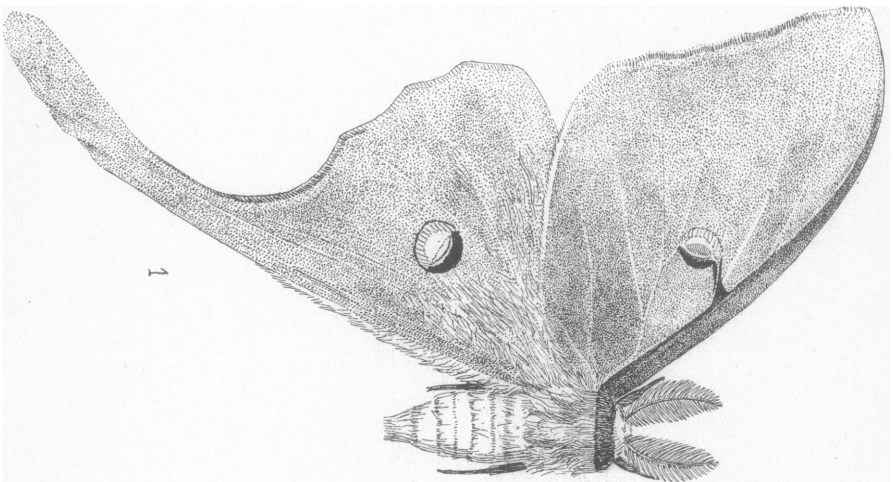
2. *Samia cynthia*.



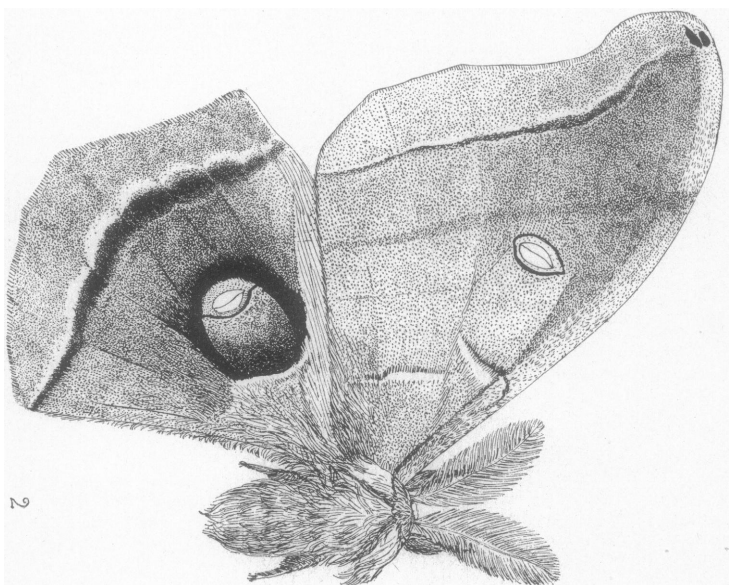
1. *Callosamia promethes* (female).

2. *Callosamia angulifera* (male).

3. *Callosamia promethes* (male).



1. *Actias luna*.



2. *Telega polyphemus*.

