

## Article VII.—CRITICAL REVIEW OF THE SESIIDÆ FOUND IN AMERICA, NORTH OF MEXICO.

By WILLIAM BEUTENMÜLLER.

The Clear-winged Moths or Sesiidæ (*Ægeriidæ*) may be superficially recognized by their narrow and more or less transparent wings, by the filiform or clavate antennæ being either ciliate, pectinate or simple ; also by the tuft at the end of the body which they can spread like a fan, especially in the male. They fly rather swiftly in the hottest sunshine, and may be readily mistaken for wasps and flies, which they resemble in appearance. On the whole the specific and generic differences of the Sesiidæ are very slight, though constant in most cases, but it requires considerable attention and careful comparison of specimens to distinguish one from another. In some species the males differ from the females, and in many instances the male has been described under one name and the female of the same species under another, or individuals more or less worn through age and flight have been described and named as different species, thus creating considerable confusion in the study of this group of Moths and in our lists. It has, therefore, seemed to me advisable for the present to consider the species only, leaving the generic value of some of the groups here recognized as genera for future consideration, and until more material has been obtained.

My studies of the Sesiidæ have been mainly based upon the types and material in the Hy. Edwards Collection in the American Museum of Natural History.

I am also under obligation to many friends and correspondents for generous aid, otherwise this paper could not have been prepared.

To Mr. G. F. Hampson, of the British Museum, I am indebted for notes and colored sketches of Walker's types.

I am also indebted to Mr. L. O. Howard for the loan of types and specimens from the U. S. National Museum Collection, and

to Prof. W. B. Barrows (through Mr. G. C. Davis) for loan of types in the Tepper Collection in the Agricultural College of Michigan.

To Mr. S. Henshaw for material from the Museum of Comparative Zoölogy at Cambridge, Mass., and for notes on Harris's types in the Boston Society of Natural History; to Prof. J. H. Comstock for loan of material from the Cornell University Collection at Ithaca, N. Y.; to Mr. J. Doll for allowing me to examine the types in the Neumoegen Collection.

For notes and specimens I am also under obligation to the following entomologists: Prof. Otto Lugger, St. Anthony Park, Minn.; Prof. D. S. Kellicott, Columbus, Ohio; Prof. F. H. Hillman, Reno, Nevada; Dr. H. H. Behr, San Francisco, Cal.; Prof. A. D. Hopkins, Blackburg, W. Va.; Messrs. Chas. Palm, L. H. Joutel, H. G. Dyar, and Mrs. A. T. Slosson, New York; J. L. Zabriskie, Brooklyn; Prof. A. R. Grote, Bremen, Germany; F. W. Kirby of the British Museum, and for many favors to Mr. Wm. Schaus.

With the aid of the types and material which have been submitted to me for examination I have been enabled to recognize all the known species of Sesiidæ found in America, north of Mexico, except the following: *Albuna modesta* Kellicott and *Melittia snowii*, which I have not had the opportunity to examine. The following species, described by Boisduval, are also unknown to me, viz.: *Sesia anthraciformis*, *S. bibionipennis*, *S. nomadæpennis*, *S. chrysidipennis* and *S. xiphieformis*. Prof. A. R. Grote and myself are of the opinion that the latter species is the same as the female of *Sanninoidea exitiosa*.

In previous papers I have used the term *Ægeriidæ* instead of Sesiidæ. This latter term has precedence, and must be used. The type of the genus *Sesia* is, so far as we can ascertain, *culiciformis*, it having been restricted to this species by Hübner (Tentamen, 1806).

As stated in the Museum Bulletin, Vol. VI, p. 87, a monograph of the Sesiidæ inhabiting North America is in course of preparation, and material from all parts of the world would be greatly appreciated; also local lists, notes on the life histories, habits, etc., of the American species, even of the most common, would be gratefully received.

As the specimens of this family soon become abraded through flight and discolored through age, perfect examples are required for description and figuring, especially as to their coloration, and specimens sent to me for this purpose would be safely returned if desired.

### **Melittia curcurbitæ (Harris).**

*Egeria curcurbitæ* HARRIS, New England Farmer, Vol. VIII, 1828, p. 33.  
*Trochilium ceto* WESTWOOD, Orient. Cab. Ent. 1848, pl. 30, fig. 6.

This well-known species was described by Harris as *Egeria curcurbitæ*, and later by Westwood as *Trochilium ceto*; consequently the former name must be used. Doubleday (Harris's Corresp., 1869, p. 161) states that *Egeria curcurbitæ* is *Melittia satyriniformis* Hübner, and if so this latter name would have precedence. Mr. Samuel Henshaw kindly examined for me Hübner's work (Zuträge Exot. Schmett., 1825), in the library of Harvard University, and writes me as follows: "The figure of *Melittia satyriniformis* differs from all *curcurbitæ* that I have seen, in coloration; the abdomen is dark blue black with light blue margins to each segment and without a trace of the orange so conspicuous in *curcurbitæ*."

*Habitat*: Canada, United States, Central and South America.

The larva lives in the stems of the cucumber and other allied plants.

### **Melittia amœna Hy. Edw.**

*Melittia amœna* HY. EDWARDS, Papilio, Vol. II, 1882, p. 53.

Not known to me. It was described from a single male, and the type is said to be in the collection of Prof. Snow. Hy. Edwards describes it as follows:

"Head black in front, with a few bluish scales. Palpi above orange, beneath white, terminal joint black within. Eyes dull orange, with the orbits clear white. Antennæ bluish black. Thorax dull bronze black, with the collar pale dull greenish, and the long hairs on the sides sordid white, with dull greenish reflection. Abdomen black, with purplish reflection; posterior edges of the segments narrowly greenish white. Caudal tuft orange brown, with black hairs. Bands on the lower side of abdomen a little wider than above. Fore coxæ black, with orange scales. Middle and hind coxæ black, edged with whitish. Fore and middle tibiæ rich orange exteriorly; black within. Bunch of hairs on hind

[June, 1896.]

tibiæ rich orange, with a few white hairs intermixed; black within. All the tarsi are black. Fore wings purplish black, covered with bright metallic green scales, less visible below. Fringes of both wings brownish black. Expanse, 27 mm. *Habitat*: Kansas."

***Melittia snowii* Hy. Edw.**

*Melittia snowii* HY. EDWARDS, Papilio, Vol. II, 1882, p. 53.

Allied to *M. curcurbitæ*. The fore wings are pale grayish brown, without any metallic green lustre. The hind tibiæ are also pale grayish brown, and the tarsi clothed with black hairs within. Palpi white. Expanse, 22 mm.

*Habitat*: Kansas.

***Melittia gloriosa* Hy. Edw.**

*Melittia gloriosa* HY. EDWARDS, Bull. Brooklyn Ent. Soc. Vol. III, 1880, p. 71.

This beautiful species may be known by its large size and robust form.

The fore wings are light grayish brown with a slight orange tint. The hind wings in the male are transparent, with the veins and inner margin heavily marked with bright orange; hind wings of the female entirely covered with orange scales. Thorax grayish brown. The abdomen has the top of the first, second and fourth segments grayish brown; third and fifth segments yellow; sides orange; last two segments grayish brown, with a decided metallic light blue reflection; the extreme posterior edge of each segment is scaled with light blue; hind tibiæ and tarsi with long orange hairs; black outside and straw yellow at base of tibiæ. The antennæ of the male are strongly bipectinate. Expanse, 41 mm.

*Habitat*: California.

The insect was reared by F. E. Blasedale from the roots of *Rhus laurina* (Proc. Ent. Soc. Wash., Vol. I, p. 85). Dr. H. H. Behr writes me that the larva feeds in the herbaceous climbing stems of *Megarhiza*.

***Melittia grandis* (Strecker).**

*Trochilium grandis* STRECKER, Can. Ent. Vol. XIII, 1881, p. 156.

Closely allied to *M. gloriosa*, but it is quite distinct. The fore wings are similar in color to *gloriosa*. The hind wings in both sexes are transparent. The abdomen is brown dorsally and

orange laterally, with the posterior edges of each segment very narrowly scaled with pale grayish brown. The underside of the abdomen is pale orange, while in *gloriosa* it is whitish. The pectinations of the antennæ of the male are also not as long as in *gloriosa*. Expanse, ♂, 38; ♀, 45 mm.

*Habitat*: Arizona and Texas.

**Gaëa** (gen. nov.) **solituda** (*Hy. Edw.*).

*Larunda solituda* HY. EDWARDS, Papilio, Vol. I, 1881, p. 182.

The wings of this insect are dirty brown, streaked with dull orange and yellow in the cell of the fore wings and in the area beyond the discal mark. The hind wings are transparent at the extreme base, and marked beyond with dull orange between the veins. The abdomen has a yellow band on each segment. The antennæ of the male are rather strongly pectinated, simple in the female. Expanse, 31 mm.

*Habitat*: Kansas and Texas.

The name *Larunda*, given by Hy. Edwards to this species, was previously established by Hübner (Verzeich. bek. Schmett., 1816, p. 289) for a genus in the Geometridæ, and therefore must be changed. I propose the name *Gaëa* instead, with *L. solituda* Hy. Edw. as the type.

**Gaëa emphytiformis** (*Walker*).

*Ægeria emphytiformis* WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 43.

*Bembecia emphytiformis* GROTE, Check List N. Am. Moths, 1882, p. 11;  
BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 23.

A type female of Walker's *Ægeria* (*Bembecia*) *emphytiformis* from the British Museum is before me. It is not a *Bembecia*, but is congeneric with *Gaëa solituda*, to which it is allied, but is much smaller. The fore wings are purplish brown with slight traces of a few reddish streaks in the area beyond the discal mark. Hind wing also purplish brown, transparent at the base, orange at base of inner margin. In *solituda* the spaces between the veins are heavily marked with dull orange yellow. Expanse, 20 mm.

*Habitat*: United States (Walker). The definite locality is not known.

**Euhagena nebraskæ** *Hy. Edw.**Euhagena nebraskæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 180.*Pyrrhotania coloradensis* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 25.

A very remarkable form, differing greatly from any other species known to me. I have examined the type in the Cambridge Museum, and find that the insect I described as *Pyrrhotania coloradensis* to be the same. Mr. L. O. Howard kindly sent me for study a perfect male from the collection of the U. S. National Museum.

The antennæ are thick with rather long, closely applied pectinations which extend to a little before the tip. The palpi are erect and clothed with loose, long hairs, as are also the head and collar. The wings are opaque, red, with a rather broad discal bar. The margins of the wings are black with the fringes fuscous. Over the outer portion, the hind wings are thinly scaled with black. Thorax black with some silvery white hairs. The hairs on the head, collar and palpi are also mixed with white. Abdomen black with a silvery white scale-like band on each segment; femora and tibiæ with short loose hairs. Anal tuft black. Expanse, 18–22 mm.

*Habitat:* Colorado and Nebraska.

**Alcathoë caudatum** (*Harr.*).

*Ægeria caudata* HARRIS, Am. Journ. Sc. and Arts, Vol. XXXVI, 1838, p. 311; WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 42; PACKARD, Guide Study Insects, 1869, p. 278; MARTIN, 5th Rep. Nox. Ins. Illinois, 1881, p. 108.

*Trochilium caudatum* FITCH, Nox. Ins. N. Y. 1856, p. 424; MORRIS, Synop. Lepid. N. Am. 1862, p. 139; BETHUNE, Can. Ent. Vol. I, p. 18; HY. EDWARDS, Papilio, Vol. II, 1882, p. 53.

*Sesia caudata* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. 1874, p. 437.

*Alcathoë caudatum* HY. EDWARDS, Papilio, Vol. II, 1882, p. 53; SMITH, Ent. Am. Vol. IV, 1888, p. 11; Cat. Ins. N. J. 1890, p. 288; BEUTENMÜLLER, Cat. Lepid. N. Y. 1890, p. 204; KELLCOTT, Can. Ent. Vol. XXIV, 1892, p. 44.

*Alcathoë caudata* JACK, Garden and Forest, 1891, p. 496. (Larva and pupa.)

*Male*.—Fore wings transparent from the base to the middle, with the costal and inner margins and outer half purplish brown with a purplish reflection; hind wings transparent, bordered with purplish black; legs orange, hind tibiæ clothed with black hairs; abdomen with a long orange anal tail-like appendage, and a short black pencil on each side at the base; antennæ orange.

*Female*.—Fore wings entirely purplish brown; legs black, tarsi orange. Abdomen in both sexes black. Expanse, 20–32 mm.

*Habitat*: Canada, Michigan, Illinois, New York, south to Virginia.

The legs of the insect are subject to variation, being marked more or less with black. The form with entirely black legs and antennæ has been named *walkeri* by Mr. Neumoegen.

Harris states that the larva inhabits the stems of our indigenous currant (*Ribes floridum*). Mr. Jack in 'Garden and Forest,' 1891, p. 496, gives a good account and figure of the larva and habits. He states that it bores in the roots of *Clematis*. Mr. Joutel and myself have also raised the species from this plant. Harris's observation is certainly founded upon an error. Mr. J. Doll has also raised the insect from the roots of *Clematis*.

### ***Sannina uroceriformis* Walker.**

- Sannina uroceriformis* WALKER, Cat. Lep. Brit. Mus. pt. VIII, 1856, p. 64 ; MORRIS, Synop. Lepid. N. Am. 1862, p. 334 (quotes Walker); BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 24.  
*Saunina uroceripennis* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. 1874, p. 465; HY. EDWARDS, Ent. Amer. Vol. III, 1888.  
*Ægeria* ? *quinquecaudata* RIDINGS, Proc. Ent. Soc. Phil. Vol. I, 1862, p. 277 ; PACKARD, Guide to Study of Insects, 1869, p. 279.  
*Sospita quinquecaudata* HY. EDWARDS, Papilio, Vol. II, 1882, p. 56.  
*Phemonoe quinquecaudata* HY. EDWARDS, Papilio, Vol. II, 1882, p. 97 ; RILEY, Proc. Ent. Soc. Wash. Vol. I, 1888, p. 85 ; Insect Life, Vol. IV, 1892, p. 332.

A colored figure of the type of this species in the British Museum was kindly sent to me by Mr. G. F. Hampson, and it is without doubt the female of *Phemonoe quinquecaudata* Ridings. The example regarded by Walker as the female is probably the female of *S. exitiosa*. Boisduval changed the name to *Saunina uroceripennis* in order to avoid confusion with the European *Sesia uroceriformis*. The change, however, was superfluous, as our species is generically distinct from the European.

The insect is wholly blue black, with an orange band on the fourth segment above ; sometimes in the male the fourth, fifth and sixth segments are orange yellow above. The hind wings are transparent at the extreme base. The male has five tufts at the end of the body. Expanse, 30-33 mm.

*Habitat*: Virginia to Florida ; Montana.

The larva lives in the roots of Persimmon.

***Trochilium pacificum* Hy. Edw.**

*Trochilium pacificum* HY. EDWARDS, Papilio, Vol. I, 1881, p. 180.

*Trochilium californicum* NEUMOEGEN, Ent. News, Vol. II, 1891, p. 108.

In the Museum Bulletin, Vol. VI, p. 365, I proposed to unite *Trochilium californicum* with *T. pacificum*. Since then I have examined the type of *californicum* in the Neumoege Collection, and find that my conclusion was correct. The larva bores in the Cottonwood.

*Habitat*: Nevada, Montana, California and Washington.

***Trochilium tibiale* Harris.**

*Trochilium tibiale* HARRIS, Am. Journ. Sc. and Arts, Vol. XXXVI, 1839, p. 309.

*Trochilium minimum* NEUMOEGEN, Ent. News, Vol. II, 1891, p. 108.

The type of *T. minimum* Neum. was examined by me, and it is the same as *T. tibiale*. This verifies my conclusion of uniting the two species as mentioned in the Museum Bulletin, Vol. VI, p. 366. The larva inhabits the Poplar and Willow.

*Habitat*: New York, Canada, New Hampshire, Massachusetts, Colorado, California and Vancouver Island.

***Trochilium apiforme* (Linn.).**

This well-known European species is found in this country as far west as Nevada. It inhabits the roots and lower parts of the trunks of Poplar and Willow. The insect is said to be very sluggish in habit, and to be readily picked off the trees when resting.

***Bembecia marginata* (Harris).**

The type of *Bembecia pleciæformis* Walker in the British Museum was kindly examined for me by Mr. G. F. Hampson, and his note is as follows: "The type of *Bembecia pleciæformis* is a male in bad condition, but without the least doubt it is the same as *B. marginata*. The markings are exact, as are the metallic blue pectinated antennæ; the partial obsolescence of the yellow



bands on the thorax and abdomen is due to grease, but they are traceable." The synonymy<sup>1</sup> of the species now stands as follows:

BEMBECIA MARGINATA *Harris.*

" *pleciæformis* WALKER.

" *odynepennis* WALKER.

" *rubi* RILEY.

" *flavipes* HULST.

*Habitat*: Canada, westward to Gulf of Georgia; Atlantic States, Ohio and Missouri.

The insect in its larval state lives in the roots and canes of Blackberry and Raspberry. The female moth is sluggish in habit, and drops to the ground when touched. The male, however, is very active. The variety *albicoma* has white bands on the abdomen instead of yellow, as in the type form.

### **Vespamima sequoiæ (Hy. Edw.).**

*Bembecia sequoiæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 181.

*Vespamima sequoiæ* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 87.

This species was described as a *Bembecia*, but was placed in a new genus (*Vespamima*) by me. It is distinct from *Bembecia*, differing by having much longer antennæ, which are ciliate in the male instead of with long pectinations as in *Bembecia*. It also differs in shape and venation. The larva is destructive to *Sequoia sempervirens*, *Pinus ponderosa* and *Pinus lambertiana* in California. *Bembecia superba* was placed by me as a synonym of *V. sequoiæ* (Bull. A. M. N. H., Vol. VI, p. 87).

### **Sciapteron denotata (Hy. Edw.).**

*Albuna denotata* HY. EDWARDS, Papilio, Vol. II, 1882, p. 55.

*Sciapteron denotata* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 24.

Originally described as an *Albuna*, but placed by me in the genus *Sciapteron*. It is closely related to the European *S. tabaniformis*, but is a much smaller insect, and differs in the number of bands on the abdomen in the female.

<sup>1</sup> See Bull. Am. Mus. Nat. Hist., Vol. V, 1893, p. 22.

Fore wings sooty black with a strong violet reflection ; along the inner margin lined with rufous ; at the insertion of the fore wings is a yellow spot. Collar yellow ; palpi black, tips yellow. Abdomen black with a yellow ring on the second, fourth and last two segments in the male. In the female there are five bands on the abdomen. Antennæ violet black above, rufous beneath, bipectinate in the male, simple in the female. Coxa yellow, femora black, middle femora with an orange band ; hind femora orange, black at base ; all the tarsi orange. Expanse, 27 mm.

*Habitat* : New Hampshire, westward to Montana.

### ***Sciapteron tricincta* (Harr.).**

*Ægeria tricincta* HARRIS, Am. Journ. Sc. and Arts, Vol. XXXVI, 1839, p. 310.

*Sciapteron tricincta* HY. EDWARDS, Grote, New Check List of Moths, 1882, p. 12.

Closely allied to *denotata*, but differs by having three broad bands on the abdomen in the male and four in the female. The species was reared by Prof. D. S. Kellicott from enlargements of the branches and stems of Poplar (*Populus candicans*) and Willow (*Salix*), caused by the larva of *Saperda concolor* and *S. moësta*.

*Habitat* : Canada, Massachusetts, New York, Ohio, Pennsylvania and Michigan.

### ***Sciapteron robiniaë* Hy. Edw.**

*Sciapteron robiniaë* HY. EDWARDS, Bull. Brooklyn Ent. Soc. Vol. III, 1880, p. 72.

This insect was described as having the thorax brown on the disc, yellow in front and behind. The types, which are before me, have the scales on the thorax abraded. A fresh example from the collection of the Museum of Comparative Zoölogy may be described as follows :

The thorax is deep black, with the patagia tipped with yellow at the posterior edge, and a transverse curved streak across the hind part of the thorax. Collar black, edged with yellow behind. Fore wings orange brown, veins somewhat darker. Hind wings transparent. Abdomen with first three segments above and below deep black, and not blackish brown, as in the original description. The second segment with a narrow yellow band, and the third segment with only a very slight trace of a band at the posterior edge ; remaining segments wholly yellow. Expanse, 25-35 mm.

*Habitat*: Nevada, California and Washington.

According to the late Hy. Edwards this species is destructive to *Robinia pseudacacia* and *Populus alba*.

**Sciapteron cupressi Hy. Edw.**

*Sciapteron cupressi* HY. EDWARDS, Papilio, Vol. I, 1881, p. 183.

Only known by a single type in the Neumoegen Collection, which I have examined. It is a female, and not a male as described by Mr. Edwards. It differs from *S. robinia*, to which it is closely allied, if not identical, by having only the first segment black and the second and third segments marked with orange, while the remaining segments are wholly yellow. Expanse, 30 mm.

*Habitat*: Colorado.

**Sciapteron scepsiformis Hy. Edw.**

*Sciapteron scepsiformis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 183.

Fore wings deep blackish brown; hind wings transparent, with the outer border running some distance inward between the veins. The abdomen is brown with a narrow yellow ring at the end of the second segment. Expanse, 26 mm.

*Habitat*: Maryland, Kansas and Texas.

The male and food habits are unknown.

**Sciapteron simulans Grote.**

*Trochilium (Sciapteron) simulans* GROTE, Bull. U. S. Geol. Surv. Hayden, Vol. VI, 1881, p. 257; Bull. Brooklyn Ent. Soc. Vol. III, 1881, p. 78.

*Trochilium luggeri* HY. EDWARDS, Psyche, Vol. VI, 1891, p. 108, pl. fig. 3; Bull. 43, Minnesota Agricul. Exp. St. p. 190, fig.

*Sciapteron simulans* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 366.

The type of *Trochilium luggeri* was kindly presented to me by Prof. Otto Lugger, and it is without doubt the same as *Sciapteron simulans* Grote, the type of which is also before me. Only the female is known. Prof. Lugger has bred the insect from Red-oak stumps.

*Habitat*: Rhode Island, Ohio, Illinois and Minnesota.

***Sciapteron palmii* (Hy. Edw.).**

*Fatua palmii* HY. EDWARDS, Can. Ent. Vol. XIX, 1887, p. 145.

*Sciapteron palmii* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 366.

This species is closely allied and congeneric with *S. simulans*. Only the female is known, and it is possible that a new genus will have to be erected for *palmii* and *simulans* when the males are known. The food habits are unknown.

*Habitat*: Florida.

***Sciapteron dollii* Neumoegen.**

*Sciapteron dollii* NEUMOEGEN, Ent. News, Vol. V, 1894, p. 330.

The late Hy. Edwards gave to this insect the name *Sciapteron castaneum*, the type of which is in the Neumoegen Collection. I am, however, unable to find a published description of this species anywhere in Mr. Edwards's papers, and conclude that it must be a MS. name. Two examples in the Edwards Collection are labeled *Trochilium polistiformis* Harris, and Mr. Edwards's note-book says "*Sciapteron castaneum*=*polistiformis*." It therefore seems to me quite evident that before publishing *castaneum* he considered it the same as *polistiformis*, which is a different species. The larva lives in the trunk of young Poplar.

*Habitat*: New York, Kentucky and Texas.

***Sciapteron polistiformis* (Harris).**

*Egeria polistiformis* HARRIS, Am. Pomol. Soc. 1854, p. 10; PACKARD, Guide Study Insects, 1869, p. 278; RILEY, 3d Rep. Nox. Ins. Mo. 1871, p. 75; MARTIN, 5th Rep. Nox. Ins. Ill. 1881, p. 108; SAUNDERS, Ins. Inj. Fruit, 1883, p. 229.

*Trochilium polistiformis* FITCH, 3d Rep. Nox. Ins. N. Y. 1856, p. 387.

*Sciapteron seminole* NEUMOEGEN, Ent. News, Vol. V, 1894, p. 330.

The types of Harris's *Egeria polistiformis* are in the collection of the Boston Society of Natural History, and were kindly examined for me by Mr. Henshaw, who informs me that they agree very well with Riley's figures of the species (Third Rep. Nox. Ins.

Mo., p. 75). I have examined the type of *Sciapteron seminole* and find that this also agrees very well with Riley's figure and description of the female of *polistiformis*. I therefore propose to unite it with the latter species. The insect in its larval state burrows in the bark and sap-wood of the roots of both wild and cultivated Grape-vine.

*Habitat*: North Carolina, Florida, Missouri and Arizona.

***Palmia* (gen. nov.) *præcedens* (Hy. Edw.).**

*Sciapteron præcedens* HY. EDWARDS, Papilio, Vol. III, 1883, p. 155.

Only known by a single specimen in the Neumoegen Collection. It is not a *Sciapteron*, but the type of a new genus. It differs from *Sciapteron* by having narrower wings with the apices very pointed and the outer margins more oblique. The palpi are much shorter, and not clothed with long hair-like scales as in *Sciapteron*. In *Sciapteron* the apices of the wings are rounded and the palpi more erect, reaching the vertex of the head, and are thickly clothed with long hair-like scales. The venation of *S. præcedens* is the same as in *Sciapteron*. The wings are brown, with a basal vitreous streak on the fore wings. The hind wings are vitreous at their base. Abdomen black, with the last three segments and anal tuft lemon yellow. The head is also smaller. Expanse, 30 mm.

*Habitat*: North Carolina.

I propose the name *Palmia* for this genus, with *S. præcedens* H. Edw. as type.

***Tirista admiranda* (Hy. Edw.).**

*Sciapteron admirandus* HY. EDWARDS, Papilio, Vol. II, 1882, p. 54.

*Tirista admirandus* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 88.

This species has been placed by me in the genus *Tirista*. A figure of *Tirista argentifrons* was published by Mr. Druce in Biologia Centrali-Americana, Vol. I, Heterocera, Plate V, Figure 14, with which *admirandus* fairly well agrees generically. It differs from

*Sciapteron* by having plumose antennæ. Only a single specimen of this insect is known at present.

*Habitat*: Texas.

### ***Tarsa denudata* (Harr.).**

*Trochilium denudatum* HARRIS, Am. Journ. Sc. and Arts, Vol. XXXVI, 1839, p. 310.

*Fatua denudata* HY. EDWARDS, Papilio, Vol. II, 1882, p. 97.

*Tarsa bombyciformis* WALKER, Cat. Lep. Br. Mus. pt. VIII, 1856, p. 61.

*Sesia asilipennis* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. Vol. I, 1874, p. 91.

*Tarsa denudata* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 22.

Easily recognized by its large size. The male has the fore wings transparent, bordered with brown and an oblique brown cross-bar, centred with rufous, at the end of the cell. Abdomen with a narrow yellow band at the posterior end of each segment. The antennæ have very long pectinations. The female has the fore wings opaque, brown, a triangular transparent mark at the hind angle, and the antennæ simple. Expanse, 32–43 mm.

*Habitat*: New York, Massachusetts, New Jersey, District of Columbia, South Carolina, Georgia, Illinois, Michigan and Texas.

The larva lives in the roots and under the bark of Ash and Alder.

### ***Parharmonia pini* (Kellcott).**

*Ægeria pini* KELLICOTT, Can. Ent. Vol. XIII, 1881, pp. 5 and 158.

*Harmonia pini* HY. EDWARDS, Papilio, Vol. II, 1882, p. 54.

Fore wings black, with a metallic blue or green reflection. Hind wings thinly covered with black scales, transparent along the inner margin. Head, thorax and legs blue black. Collar orange. Abdomen above blue black, with an orange band on the fourth segment. Underside of abdomen wholly orange. Anal tuft orange, blue black in the middle above. Expanse, 28 mm.

*Habitat*: Canada and New York.

The larva lives under the bark of Pine.

### ***Parharmonia fraxini* (Hy. Edw.).**

*Carmenta fraxini* HY. EDWARDS, Papilio, Vol. I, 1881, p. 185.

*Harmonia morrisoni* HY. EDWARDS, Papilio, Vol. II, 1882, p. 54.

*Parharmonia fraxini* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 89.

Fore wings opaque, blackish brown with a violet reflection. At end of discal cell a red cross-bar. Hind wings transparent with a narrow violet black border. Body and legs black. Antennæ yellowish before the tip. Expanse, 21-25 mm.

*Habitat*: New York, New Jersey, Washington, D. C., Missouri and Montana.

### **Parharmonia græfi** (*Hy. Edw.*).

*Sciapteron græfi* HY. EDWARDS, Papilio, Vol. I, 1881, p. 183.

*Parharmonia græfi* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 89.

Wholly black. Fore wings with a strong metallic green reflection like the female of *Sanninoidea opalescens*. Hind wings transparent with a narrow black border. Expanse, 27 mm.

*Habitat*: Nevada.

### **Podosesia syringæ** (*Harr.*).

Fore wings deep brown, with a slight violet lustre; at the base two short transparent streaks and marked with red on the costa and inner margin. Hind wings transparent, thinly scaled with brown outwardly; veins brown. Head brown, palpi and collar rufous; thorax brown, with the patagia tinged with rufous. Abdomen deep brown, with a yellow spot on each side of the fourth segment. Legs yellow, broadly banded with black; femora blackish. Expanse, 26-35 mm.

*Habitat*: Massachusetts, New York, westward to Iowa, and southward to Texas.

This is the well-known Lilac and Ash borer. It also affects the Mountain Ash (*Pyrus americana*), according to Prof. D. S. Kellicott.

### **Podosesia fraxini** (*Lugger*).

*Trochilium fraxini* LUGGER, Psyche, Vol. VI, 1891, p. 109, pl. iii, fig. 4.

*Podosesia fraxini* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 88.

Closely allied to *P. syringæ*, but differs from it in having the fore wings testaceous, and the abdomen banded with yellow. The patagia are yellow at the posterior part, and the collar orange in front and yellow behind. Expanse, 27-34 mm.

*Habitat*: Minnesota and Montana.

The larva affects the Ash.

**Sanninoidea** (gen. nov.) **exitiosa** (Say).

This species has been erroneously referred to the genus *Sannina*, the type of which is *S. uroceriformis* Walker (see *antea*, p. 117). *S. exitiosa* belongs to a different genus, for which I would propose the name *Sanninoidea*.

This is the well-known borer which is so injurious to the Peach.

The male has the wings transparent, with steel blue borders and fringes; the borders are sometimes scaled more or less with yellow. Head black, with a yellow patch on the vertex; palpi yellow below, black above; collar black, yellow in the middle on top; thorax black, with the patagia edged internally with yellow, this color forming an angle at the anterior portion of the thorax; metathorax with a few yellow scale-like hairs. Abdomen blue black, narrowly banded with yellow on the second, fourth, fifth and sixth segments; anal tuft wedge-shape, black, tipped with white laterally. Legs black, with joints yellow. The female is wholly steel blue black, with the fourth and sometimes also the fifth segment orange. Hind wings transparent, broadly bordered with blue black and scaled with this color at the base, and costa and also sometimes between veins one and two, thus leaving two small clear spaces. In the female variety *fitchii* Hy. Edw. all the segments from the fourth to the last, inclusive, are orange, and in the male variety *luminosa* Neum. the borders are heavily scaled with yellow. Expanse, 22-34 mm.

*Habitat*: Canada to Texas.

**Sanninoidea opalescens** (Hy. Edw.).

*Ægeria opalescens* HY. EDWARDS, Papilio, Vol. I, 1881, p. 199.

*Sannina pacifica* RILEY, Insect Life, Vol. III, 1891, p. 292.

*Sannina opalescens* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 366.

Allied to *S. exitiosa*. The male has the outer border of the fore wing twice as broad as in *exitiosa*, and the transverse bar at the end of the discal cell is also broader. The head, palpi, thorax and abdomen lack the yellow markings. The legs are black, with only a few whitish hairs on the tibiae and tarsi. The female is like that of *exitiosa*, but all traces of the orange bands on the abdomen are wanting and the hind wings are transparent, with only a few steel blue scales basally and a narrow outer border. Expanse, 23-33 mm.



*Habitat*: Nevada, Colorado and California.

Like *exitiosa* this species also affects the Peach as well as the Apricot.

I have examined the types of *Sannina pacifica*, and have found that the male of this species was previously described as *Æ. opalescens*. I am indebted to Mr. L. O. Howard for the loan of one of the type females of *S. pacifica*.

### **Albuna pyramidalis (Walker).**

*Egeria pyramidalis* WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 40 ;  
BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. VI, 1894, p. 89.

*Egeria hylotomiformis* WALKER, Cat. Lepid. Br. Mus. pl. VIII, 1856, p. 43.

*Albuna hylotomiformis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 186.

*Albuna vancouverensis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 188.

In the Museum Bulletin, Vol. V, 1893, p. 23, I published the following note made by the late Hy. Edwards on the type of Walker's *Æ. hylotomiformis*: "Is a good species, and is unknown to me." Since then I am informed by Mr. G. F. Hampson of the British Museum that *hylotomiformis* is the same as *Æ. pyramidalis*. Mr. Hampson's note is as follows: "That *hylotomiformis* = *pyramidalis* there is not the least doubt; the type is a female. The tinge of red on antennæ, the streak on inner area of fore wing and on each side of discocellular band, and the arrangement of yellow bands on abdomen, are quite conclusive." The species and varieties now stand as follows:¹

ALBUNA PYRAMIDALIS *Walker.*

*hylotomiformis* WALKER.

*vancouverensis* HY. EDWARDS.

var. MONTANA *Hy. Edwards.*

*tanacetii* HY. EDWARDS.

var. RUBESCENS *Hulst.*

var. COLORADENSIS *Hy. Edwards.*

*torva* HY. EDWARDS.

*Habitat*: Nova Scotia, Canada, and Maine to Massachusetts, westward to the Pacific.

¹ See Bull. Am. Mus. Nat. Hist., Vol. VI, pp. 89-91.

***Albuna modesta* Kellicott.**

*Albuna modesta* KELLICOTT, Can. Ent. Vol. XXIV, 1892, p. 46.

I have not had the opportunity of seeing this species, and therefore am not able to tell whether it is an *Albuna* or a *Sesia*. In the Museum Bulletin, Vol. VI, p. 92, I expressed the opinion that *Albuna modesta* was the same as *Sesia albicornis*, but a comparison of the types is necessary to definitely decide this question.

***Sesia giliæ* (Hy. Edw.).**

*Ægeria giliæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 200.

*Albuna vitrina* NEUMOESEN, Ent. News, Vol. II, 1891, p. 109.

*Ægeria deceptiva* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 93.

The type of *S. giliæ* is a female, and the species described as *Albuna vitrina* is a male, and is in my opinion nothing more than the male of the former. *Vitrina* is not an *Albuna*, but must be referred to the genus *Sesia*. In the Museum Bulletin, Vol. VI, p. 367, I erroneously united *vitrina* with *Albuna pyramidalis*, considering it to be merely one of the varieties of the latter species. Since then I have had the opportunity of examining the type of *vitrina*, and find that it is distinct from *Albuna pyramidalis*, and that the species described by me as *Ægeria deceptiva* is the same as *vitrina*. The original description of *vitrina* is misleading, no mention being made of the yellow bands on the abdomen.

*Male*.—Head blackish brown, front whitish; palpi yellow mixed with black hair outside; thorax blackish, with the posterior edge of the patagia yellow; abdomen blackish with a yellow band on the second, fourth, sixth and seventh segments; anal tuft black on top, yellow beneath and in the middle above. Legs yellow with a black band on the tibiae; femora black. Underside of abdomen with the bands from above repeated and the segments between scaled with yellow. Wings transparent with narrow blackish brown borders and discal bar. Underside of wings with costal border and discal bar yellow. Expanse, 20 mm.

*Female*.—Like the male, but differs as follows: Palpi wholly yellow; margins of wings brown; discal bar with an orange spot. Abdomen with a yellow band on the upper side of the second, fourth and sixth segments; underside of abdomen similar to that of the male. Expanse, 24–29 mm.

*Habitat*: Colorado, Montana, and Calgary, British Columbia.

***Sesia mellinipennis* Boisduval.**

*Sesia mellinipennis* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. 1874, p. 402, pl. xiv, 10 B. fig. 12; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 96.

*Albuna resplendens* HY. EDWARDS, Papilio, Vol. I, 1881, p. 186.

*Albuna artemisiæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 187.

*Ægeria senecioides* HY. EDWARDS, Papilio, Vol. I, 1881, p. 198.

The types of *Albuna artemisiæ* and *Ægeria senecioides* are before me. Both are males and undoubtedly the same species. The only differences are that *artemisiæ* has the bands on the abdomen more distinct and the margins of the wings darker brown. This may be from the more perfect condition of the insect, *senecioides* being somewhat worn through age or flight. *Albuna resplendens* was described as a male, but the type is a female, and I consider it the same as *artemisiæ*. It also agrees very well with the species described and figured by Boisduval as *Sesia mellinipennis*, and I would propose to unite it with this latter species.

*Habitat* : California and Nevada.

***Sesia rileyana* (Hy. Edw.).**

*Albuna rileyana* HY. EDWARDS, Papilio, Vol. I, 1881, p. 187.

*Ægeria hyperici* HY. EDWARDS, Papilio, Vol. I, 1881, p. 195.

*Albuna rileyana* was described from a single female specimen, and *Ægeria hyperici* from two examples, as females, but the types are males, and are undoubtedly the same as *rileyana*. The species fits better in the genus *Sesia* than in *Albuna*. The wings are largely transparent with narrow brown borders. The discocellular spot is bright orange red; palpi yellow, with a few black hairs at the sides; abdomen black with six narrow yellow bands. Expanse, 19-25 mm.

*Habitat* : West Virginia, Missouri and Kansas.

***Sesia brunneipennis* (Hy. Edw.).**

*Ægeria brunneipennis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 191.

The type of this species, from the Tepper Collection in the Michigan Agricultural College, was kindly sent to me for examination [June, 1896.]

ination by Prof. Barrows through the kindness of Mr. G. C. Davis. The insect is closely related to, if not identical with, *S. rileyana*. It differs from it by having the brown margins of the fore wing much broader, thus making the wings more opaque. The outer portion is almost entirely opaque, with only a few short transparent streaks in the area beyond the orange discocellular spot. This space in *rileyana* is largely transparent. Abdomen with five yellow bands. Expanse, 23 mm.

*Habitat* : West Virginia and North Carolina.

### ***Sesia mimuli* (Hy. Edw.).**

*Ægeria mimuli* HY. EDWARDS, Papilio, Vol. I, 1881, p. 200.

Closely allied to *S. rileyana*, but the bands on the abdomen are pale yellowish white instead of bright yellow. The front of the head is white, as are also the scales on the palpi. The markings on the wings above and beneath are also paler. It is possible that this species may prove to be a climatic variety of *rileyana*. Expanse, 21 mm.

*Habitat* : Colorado.

### ***Sesia rutilans* (Hy. Edw.).**

*Albuna rutilans* HY. EDWARDS, Papilio, Vol. I, 1881, p. 186; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 94.

*Ægeria aureola* HY. EDWARDS, Papilio, Vol. I, 1881, p. 194.

*Ægeria hemizonia* HY. EDWARDS, Papilio, Vol. I, 1881, p. 198.

*Ægeria lupini* HY. EDWARDS, Papilio, Vol. I, 1881, p. 192; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 91.

*Ægeria perplexa* HY. EDWARDS, Papilio, Vol. I, 1881, p. 192.

*Ægeria impropria* HY. EDWARDS, Papilio, Vol. I, 1881, p. 193.

*Ægeria washingtonia* HY. EDWARDS, Papilio, Vol. I, 1881, p. 197.

*Ægeria madaria* HY. EDWARDS, Papilio, Vol. I, 1881, p. 201 (in part).

*Male*.—Head black; palpi yellow, with a black stripe outside; collar and underside of thorax yellow; thorax above black with the patagia tipped with yellow at the posterior end. Legs yellow banded with black. Fore wings broadly bordered with blackish brown; between the veins, along the outer border, are traces of yellowish rays. The basal transparent space is small and

triangular; discocellular spot large with the clear space beyond small and round. Hind wings transparent, bordered with blackish brown and a few yellow hairs at the base of the inner margin. Abdomen blackish brown with a rather broad yellow band at the posterior edge of the second and fourth segments. Underside of fore wings streaked with golden yellow between the veins of the opaque portion; hind wings with a narrow golden yellow border preceding the brown fringes. Abdomen edged along each side with yellow points. Anal tuft flat, black above, orange at the sides and middle beneath. Expanse, 18-21 mm.

*Female*.—Head black; palpi and collar yellow; thorax black above, with a yellow stripe along each side and a small transverse spot on the posterior portion; thorax beneath yellow. Abdomen black, a yellow band on the second, fourth, fifth and sixth segments, sometimes the band on the fifth segment wanting. Legs yellow, banded with black; tarsi yellow. Fore wings blackish brown, bright orange between the veins. The orange scales almost obscure the transparent portions of the wings. Hind wings transparent, very narrowly bordered with brown and golden yellow; fringes brown. Anal tuft bunch-like, yellow, black at the base in the middle above. Underside of fore wings almost entirely clear pale orange yellow with only the discocellular spots, the outer veins and fringes brown. Hind wings with the orange border broader than above. Abdomen with the bands repeated. Expanse, 17-21 mm.

*Habitat*: California, Nevada, Washington, Texas and Colorado.

The above descriptions were taken from three bred males and three females from the collection of the U. S. National Museum, sent me through the kindness of Mr. L. O. Howard. The species lives in the roots of the Strawberry, as recorded by the late C. V. Riley (Proc. Ent. Soc. Wash., Vol. I, p. 85).

Mr. J. J. River has bred the species from the roots of the garden Raspberry and cultivated Blackberry (Ent. Amer., IV, p. 99). He also states that the male sometimes has three abdominal bands of pale yellow, and when three are present the third is at the base of the anal tuft. Another variation shows a tendency in the male to imitate the dorsal markings of the female by having well-developed bands on the second, fourth and sixth segments, and on the dorsum of all the other segments is to be seen a cluster of yellow scales, forming a nucleus of a yellow band.

The species described as *perplexa*, *lupini*, *impropria* and *washingtoniæ* are males, and *hemizoniæ*, *areola* and *rutilans* are the females. The specimen described as the male of *madariæ* is the male of *rutilans*, and the female is probably a distinct species.

***Sesia madariæ* (Hy. Edw.).**

*Ægeria madariæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 201.

Head black, collar and palpi yellow; thorax black, with a yellow stripe along the inner edge of the patagia, and a yellow mark at the posterior edge. Abdomen with a yellow band on the second and fourth segments. Fore wings purplish black, with the transparent spaces very small. Hind wings transparent, with the violet black border narrow. Underside of fore wings largely golden yellow. Expanse, 15 mm.

*Habitat*: California.

Two females of this species are in the Hy. Edwards Collection, and they look very much like the male of *Sesia rutilans*.

***Sesia neglecta* (Hy. Edw.).**

*Ægeria neglecta* HY. EDWARDS, Papilio, Vol. I, 1881, p. 197.

Allied to *S. madariæ*, but the fore wings are almost entirely opaque, with only a very small transparent space in the cell and beyond the discal spot; between the veins on the outer portion the fore wings are streaked with dull yellow. Otherwise it is the same as *S. madariæ*, and is probably the same species, but more material is required to verify my suspicion. Expanse, 16 mm.

*Habitat*: Washington, California and Nova Scotia.

***Sesia refulgens* (Hy. Edw.).**

*Ægeria refulgens* HY. EDWARDS, Papilio, Vol. I, 1881, p. 199.

Head and antennæ black; palpi and collar yellow; thorax black, with a yellow band across the posterior portion and a few yellow hairs at the posterior end of the patagia. Abdomen black, with a yellow band on the second, fourth and sixth segments, and faint traces of another yellow band on the fifth segment. Anal tuft black, yellow at the sides above. Legs yellow and black, femora black, tibiæ yellow, with a black band. Fore wings violet brown, marked with orange in the transparent portion; discal spot orange outside. Hind wings transparent, with a narrow violet brown border. Underside of fore wings bright orange between the veins and along the costa of the hind wings. Expanse, 18 mm.

*Habitat*: Georgia.

The type is in the Tepper Collection in the Agricultural College of Michigan, and was sent to me for examination by Prof.

Barrows. It is a female and not a male, as described by Hy. Edwards. It is closely related to *S. rutilans*, but the fore wings are narrower, and the discal spot is orange outside and the patagia are tipped with yellow. It also lacks the orange on the border of the hind wings.

### *Sesia novaroënsis* (Hy. Edw.).

*Ægeria novaroënsis* BEHRENS MS. HY. EDWARDS, Papilio, Vol. I, 1881, p. 199.

Head, palpi and collar bright orange; thorax above black, patagia orange, as is also the underside. Abdomen black, with a bright orange band on each segment; underside of abdomen wholly orange. Legs orange, with black rings. Fore wings transparent, with a blue black narrow border; transverse discal spot blue black. Hind wings transparent, with a narrow blue black border. Expanse, 30-35 mm.

*Habitat*: California and Oregon.

The specimen described by Hy. Edwards as the male of this species is a female. It is the largest *Sesia* known in this country at present. The male is unknown.

### *Sesia bassiformis* Walker.

*Ægeria (Paranthrene) bassiformis* WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 39.

*Trochilium (Paranthrene) bassiformis* MORRIS, Synop. Lepid. N. Am. 1862, p. 331 (quotes Walker).

*Sesia bassiformis* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. 1874, p. 434 (quotes Walker).

*Ægeria bassiformis* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 24.

In the Museum Bulletin, Vol. V, p. 25, and Vol. VI, p. 92, I united *Æ. sexfasciata*, *consimilis*, *eupatori*, *infirmata* and *bolli* with *Æ. lustrans* after an examination of the types. Since then the type of *Æ. imitata* was examined, and the insect must also be referred to *lustrans*. In my opinion *Æ. bassiformis* Walker is nothing more nor less than a worn example of the male of *Æ. lustrans*. Mr. Hy. Edwards's note on the type of *bassiformis*,<sup>1</sup> which was seen by him in the British Museum, is as follows: "It is very like *Ægeria lustrans* Gr., but blacker. This may be

<sup>1</sup> Bull. Am. Mus. Nat. Hist., Vol. V, p. 24.

from imperfect condition. It has four narrow bands on the abdomen, and one a little wider at the base." Recently I received from Mr. Hampson a colored sketch of the type of *bassiformis*, and it agrees very well with the types of *Æ. eupatorii* and *Æ. consimilis*, both of which are worn examples of *Æ. lustrans*. I therefore propose to unite *lustrans* with *bassiformis*. The bands of this insect soon become abraded through flight, after it emerges from the pupa, and the older the insect becomes the blacker it gets, and as a consequence specimens may be found with one, two, three, or the usual number (six) bands, or without any. Thus more or less worn individuals may be readily mistaken for different species. The larva lives in the stems of *Eupatorium*.

The synonymy of the species is now as follows :

*SESIA BASSIFORMIS* Walker.

*lustrans* GROTE.

*sexfasciata* HY. EDW.

*consimilis* HY. EDW.

*eupatorii* HY. EDW.

*infrma* HY. EDW.

*imitata* HY. EDW.

*Habitat* : Massachusetts and New York to Texas.

### ***Sesia rubrofascia* (Hy. Edw.).**

*Ægeria rubrofascia* HY. EDWARDS, Papilio, Vol. I, 1881, p. 191.

*Ægeria bolteri* HY. EDWARDS, Papilio, Vol. III, 1883, p. 155.

*Ægeria bolteri* was originally described as a male, but the type which is before me is a female, and I regard it as the female of *Ægeria rubrofascia*. Expanse, 18-20 mm.

*Habitat* : Georgia and Northern Illinois.

### ***Sesia pictipes* (Hy. Edw.).**

*Ægeria pictipes* GROTE & ROBINSON, Trans. Amer. Ent. Soc. Phila. Vol. II, 1868, p. 182.

*Ægeria inusitata* HY. EDWARDS, Papilio, Vol. I, 1881, p. 201.

Both sexes of this species are very much alike, and resemble the male of *Sanninoidea exitiosa*, of which the female has opaque



wings. *S. pictipes* has the wings largely transparent, the border blue black and very narrow. The abdomen is blue black, with a very narrow yellow band on the upper side of the second segment and one on the underside of the fourth segment, by means of which it may be readily separated from *exitiosa*. The latter also has a wedge-shaped anal tuft, while that of *pictipes* is merely a straight bunch of hairs. The larva lives under the bark of Plum, Wild Cherry (*Prunus serotina*), *Prunus pennsylvanicus*, Juneberry (*Amelanchier canadensis*) and Beach Plum (*Prunus maritima*). Expanse, 17-26 mm.

*Habitat*: Canada, New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Illinois and California.

### *Sesia fulvipes* (Harris).

*Ægeria fulvipes* HARRIS, Am. Journ. Sci. and Arts, Vol. XXXVI, 1839, p. 312.

Head black, antennæ orange before the tip, beneath palpi orange, black inside; thorax black, with an orange spot on each side beneath. Abdomen black, with the three basal segments beneath orange. Legs orange, with the femora black. Wings with very narrow black borders. The female has the outer border of the fore wings somewhat broader than the male, and the first two segments are black in the middle and orange at the side, third segment wholly orange; the abdomen above is wholly black, as in the male. Expanse, 22 mm.

*Habitat*: Massachusetts and Canada.

### *Sesia saxifragæ* (Hy. Edw.).

*Ægeria saxifragæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 190; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1895, p. 91.

*Ægeria henshawi* HY. EDWARDS, Papilio, Vol. II, 1882, p. 56.

Allied to *S. fulvipes*, but differs from it by having the abdomen wholly black above and below, the borders of the fore wings broader, and by the absence of the orange before the tip of the antennæ beneath. At the base of the wings are a number of orange scales, as well as on the underside of the fore wings. Expanse, 20-22 mm.

*Habitat*: Labrador and Colorado.

***Sesia albicornis* (Hy. Edw.).**

*Aegeria albicornis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 201; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 92.

*Aegeria proxima* HY. EDWARDS, Papilio, Vol. I, 1881, p. 201.

*Male*.—Head black, palpi white beneath; antennæ black, sometimes with a white patch before the tip; thorax black with a narrow yellow line on each side, and a yellow spot on each side beneath. Abdomen black above, steel blue black beneath; anal tuft black edged with white on each side and white in the middle beneath. Legs steel blue, fore coxa white, and the spurs and tufts on the joints white. Fore wings with the outer border sometimes marked with yellow between the veins; costal margin narrow; transverse discal mark violet black. Underside of fore wings streaked with yellow in the opaque portion. Hind wings transparent, with a narrow black border. Expanse, 17-19 mm.

*Female*.—Wholly bronzy black, with the antennæ marked more or less with white before the tip. Costa on the fore wings beneath scaled with yellow. Legs with the joints tufted with white, spurs also white. Expanse, 22 mm.

*Habitat*: New York to California and Oregon.

The species has been reared from larvæ found under the bark of Willow (Proc. Ent. Soc. Wash., Vol. I, p. 85). I have also bred it from the trunks of low willows, which were infested with *Cryptorhynchus lapathi*. In a female example from Colorado the palpi are pale yellow beneath instead of black.

***Sesia culiciformis* var. *americana*, var. nov.**

*Aegeria culiciformis* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 93.

Wings transparent, with the black margins and discal transverse mark on the fore wings metallic blue black. Head, antennæ, thorax and rest of body also metallic blue black, except the base of fore wings and the palpi orange; the fourth segment of the abdomen is red above and below, and on each side of the thorax beneath is an orange spot. The tarsi are also slightly tinged with pale orange. In one example there is a red stripe on each side of the abdomen from the base to the red fourth segment. Expanse, 21-24 mm.

*Habitat*: Nevada and British Columbia.

This form was first recorded by me as occurring in this country from a specimen in the collection of Mr. Charles Palm, from the Cascade Mountains, British Columbia.

It differs from the typical European *culiciformis* by the absence of the orange scales at the base of the fore wings above, and by having only the base of the fore wings beneath orange, while in the European form the dark portion beneath is almost entirely golden orange yellow. It also differs by having the legs entirely blue black, and lacking the pale orange patch on the hind tibiae. It is also darker and more metallic blue. Since the record of this variety I have received from Mr. H. F. Hillman, from Reno, Nevada, a branch of Alder, from which emerged four specimens of this beautiful insect.

***Sesia tepperi* (Hy. Edw.).**

*Pyrrhotenia tepperi* HY. EDWARDS, Papilio, Vol. I, 1881, p. 203.

Head orange, with a white spot before each eye; palpi, thorax above and below, underside of abdomen, first segment above and anal tuft deep orange; remaining segments above blue black. Fore wings metallic blue black, cell transparent; area beyond discal spot very small. Expanse, 22 mm.

*Habitat*: Georgia.

The type is in the Tepper Collection in the Agricultural College of Michigan, and was sent to me by Prof. Barrows. It is a female, and not a male, as described by Hy. Edwards, and is generically the same and allied to *S. culiciformis*.

***Sesia aureopurpurea* (Hy. Edw.).**

*Ægeria* (?) *aureopurpurea* HY. EDWARDS, Bull. Brooklyn Ent. Soc. Vol. III, 1880, p. 72.

Fore wings opaque, violet brown, with a few short, yellow streaks before the outer margin. Hind wings transparent, border narrow, violet brown. Head black, palpi yellow. Thorax blackish brown, with a narrow yellow stripe on each side. Abdomen violet brown, with a narrow yellow ring on the first, second, fourth and anal segments. Anal tuft violet brown, yellow in the middle beneath. Antennæ with a white patch before the tip. Undersides of wings same as above, but the fore wings are much brighter and more metallic. Expanse, 12 mm.

*Habitat*: Texas.

***Sesia acerni* (Clem.).**

This is the well-known Maple borer, to which trees the larvæ are especially destructive. The moth emerges early in the morning and flies as soon as the wings are expanded and dried. The male moth, according to Mr. L. H. Joutel, when in search of the female, flies up and down the trunk of the tree, very much like the males of the Ichneumon Fly (*Thalessa lunator*).

***Sesia corni* (Hy. Edw.).**

*Ageria corni* HY. EDWARDS, Papilio, Vol. I, 1881, p. 190; KELLICOTT, Can. Ent. Vol. XXIV, 1892, pp. 46 and 210; Insect Life, Vol. V, 1892, p. 83.

*Male*.—Head black, palpi orange, last joint black outside; collar orange; antennæ black, with a whitish patch outside before the tip; thorax black above; patagia mixed with yellow hairs; yellow beneath; abdomen black, with a very narrow yellow ring at the posterior edge of the second, fourth, fifth and sixth segments; underside of last three segments pale yellow; anal tuft orange, black above and laterally at the base; coxæ yellow, femora, tibiæ and tarsi black, yellow inwardly, spurs yellow. Fore wings transparent, costa with a narrow black margin, apical portion broadly black; discal mark large and broad. Hind wings transparent, with a very narrow black border. Expanse, 17–20 mm.

*Habitat*: New York, Massachusetts and Ohio.

Allied to *S. acerni*. According to Prof. D. S. Kellicott, the female is the same as the male in general color, but differs in having less black at the tips of the palpi, and in having much more golden on the abdomen beneath, this color extending over the dorsum so that nearly all the segments are faintly edged, and the fourth has a broad band. It also lacks the black in the anal tuft, which is reddish orange. A female in the collection of Rev. J. L. Zabriskie has the bands on the abdomen all very narrow. The larva lives under the bark of Maple.

***Sesia tipuliformis* (Linn.).**

This well-known species is found in this country from the Atlantic to the Pacific coast. In its larval stage it lives in the stems of the cultivated Currant, and according to Dr. Staudinger it also lives in the young shoots of Hazel (Stettin Ent. Zeitsch., Vol. XVII, p. 202).

### *Sesia pyri* (Harris).

*Trochilium pyri* HARRIS, New England Farmer, Vol. IX, 1830, p. 2.

*Egeria pyri* HARRIS, Am. Journ. Sci. and Arts, Vol. XXXVI, 1839, p. 313.

*Sesia pyri* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. 1874, p. 440.

*Egeria kabelei* HY. EDWARDS, Papilio, Vol. I, 1881, p. 196.

*Male*.—Head black, orbits white; palpi yellow beneath, black above; antennæ with a dull yellow patch before the tip, but mostly always entirely black. Thorax black above, yellow at the sides beneath. Abdomen blue black, with a narrow yellow ring at the posterior edge of the second and fourth segments; underside of abdomen washed with yellow; anal tuft black, slightly yellow in the middle beneath. Fore wings narrow, margins and the discal bar bronzy brown. Expanse, 14 mm.

*Female*.—Larger than the male, with a clear pale yellow patch on the outside of the antennæ before the tip. Abdomen with a narrow yellow band on the second segment and a broader one on the fourth segment. On the first and second segments laterally is a short yellow stripe. Fourth segment beneath wholly yellow. Anal tuft black, with a bunch of yellow hairs on each side above. Legs largely black, with narrow yellow bands. The underside of the fore wings with more and brighter yellow along the costa and outer portion. Expanse, 18 mm.

*Habitat*: Canada to Florida, and westward.

The type of *Æ. kabelei* I regard to be nothing more than a worn male of *Sesia pyri*. The larva lives under the bark of Pear and Apple.

### *Sesia scitula* (Harris).

*Egeria scitula* HARRIS, Am. Journ. Sci. and Arts, Vol. XXXVI, 1839, p. 313; WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 45; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 94.

*Trochilium scitula* MORRIS, Synop. Lepid. N. Am. 1862, p. 141.

*Sesia scitula* BOISDUVAL, Suites à Buffon, Nat. Hist. Lépid. 1874, p. 439.

*Trochilium gallivorum* WESTWOOD, Gardener's Chronicle, 1854, p. 757;

Proc. Ent. Soc. Lond. (2) III, 1854, p. 21; HY. EDWARDS, Papilio, Vol.

II, 1882, p. 97; KELLICOTT, Can. Ent. Vol. XXIV, 1892, p. 45.

*Trochilium hospes* WALSH, Proc. Ent. Soc. Phila. Vol. VI, 1866, p. 270;

PACKARD, Fifth Rep. U. S. Ent. Comm. 1890, pp. 217, 270 and 296.

*Egeria amula* HY. EDWARDS, Papilio, Vol. III, 1883, p. 155.

*Male*.—Head black, with a silvery white line before each eye; palpi yellow, tip black; antennæ steel blue black; thorax blue black, with a narrow yellow line on the patagia. Abdomen steel blue black, with a narrow yellow band on posterior edge of the second segment above and a broader band on the sixth

segment, which is also present on the underside ; anal tuft black, yellow at the sides ; at the base of the abdomen on each side is a short narrow yellow stripe terminating at the band in the second segment. Legs yellow, middle and hind femora black, and a purple band at the end of the middle and hind tibiae. Fore wings transparent, costal border very narrow, outer border broader and marked with yellow between the veins ; discal bar narrow, violet. Hind wings with border very narrow. Undersides of the wings similar to the upper ; underside of abdomen marked with yellow on the last three segments. Expanse, 19-20 mm.

*Female*.—Similar to the male, but larger and heavier. The palpi are wholly yellow and the fourth segment is wholly yellow above and below ; the fifth and sixth are yellower beneath ; on the fore wings the yellow between the veins of the outer border is also more distinct, and the anal tuft is yellow at the sides above. Expanse, 22 mm.

*Habitat*: New York, New Jersey, Virginia, Massachusetts, Canada and Illinois.

This species has been bred from Oak Galls (*Andricus cornigerus*) by Rev. J. L. Zabriskie, and by me from under bark of Chestnut. Walsh bred it from a Willow gall, and specimens from Oak and Hickory galls, which he doubtfully referred to *S. scitula* (*hospes*). Mr. L. H. Joutel bred it from the trunk of Dogwood (*Cornus florida*). It is closely allied to *S. pyri*, but the legs are largely yellow ; the thorax has a yellow stripe on each side ; the antennæ lack the white patch, and the female has the fourth segment wholly yellow above and below. The types of *Ægeria æmula* from the Riley Collection were sent to me by Mr. Howard, and they are the males of *scitula*. Dr. Riley bred them from larvæ found in November under the bark of an old Oak. They emerged May 22 and 24.

### *Sesia corusca* (Hy. Edw.).

*Ægeria corusca* HY. EDWARDS, Papilio, Vol. I, 1881, p. 193.

Bronzy brown, with a violet reflection. Head bluish black, white in front ; palpi yellow ; collar yellow ; thorax with a narrow yellow line laterally ; abdomen with a narrow yellow band on the first, second, third, fourth and sixth segments. Anal tuft yellow at the sides. Fore wings with transparent area beyond the discal mark, small and round ; outer portion streaked with yellow between the veins. Expanse, 14 mm.

*Habitat*: Texas.

Allied to *S. pyri*, but differs by the bands on the abdomen and in having the outer transparent space on the fore wings round, while in *pyri* it is quadrate.

***Sesia decipiens* Hy. Edw.**

*Egeria decipiens* HY. EDWARDS, Papilio, Vol. I, 1881, p. 187.

*Egeria nicotianæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 202.

In this Bulletin, Vol. VI, p. 367, I united *Egeria imperfecta* with *Egeria decipiens*, there being no sufficient characters to warrant their separation as distinct species. Since then I have carefully studied the type of *Egeria nicotianæ* and find that it must also be referred to *decipiens*. It only differs by being somewhat smaller. *Decipiens* and *nicotianæ* are males, while *imperfecta* is undoubtedly the female.

*Habitat*: Colorado and Texas.

***Sesia rubristigma* (Kellicott).**

*Egeria rubristigma* KELLICOTT, Can. Ent. Vol. XXIV, 1892, p. 212; Insect Life, Vol. V, 1892, p. 84; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 94.

An example of this species was kindly sent to me by Prof. D. S. Kellicott, who bred the same from the galls on Oak (*Quercus palustris*). It is a good species, allied to *S. decipiens*, and not identical with the example recorded by the late Hy. Edwards as the European *asiliiformis*, as I supposed.

*Habitat*: Ohio.

***Sesia querci* (Hy. Edw.).**

*Egeria querci* HY. EDWARDS, Papilio, Vol. II, 1882, p. 98.

Allied to *decipiens*, but a much more delicate insect. The margins of the wings are very narrow and the antennæ are thicker. The palpi are black outside and white inside and at the tip. The abdomen has five yellow bands, the one on the fourth segment almost as broad as the segment. Expanse, 12 mm.

*Habitat*: Arizona.

The Moth has been bred from galls found on Live Oak.

***Sesia prosopis* (Hy. Edw.).**

*Ægeria prosopis* HY. EDWARDS, Papilio, Vol. II, 1882, p. 99.

A good species and different from all the known American species. It has the margins of the wings, head, antennæ and body deep black. The palpi are white beneath, with the last joint and above black. The legs are black, with the coxæ of the anterior pair, joints and spurs white. The fringes of the hind wings are also white. Has been raised from galls found on Mesquite.

*Habitat*: Arizona.

***Sesia tecta* (Hy. Edw.).**

*Ægeria tecta* HY. EDWARDS, Papilio, Vol. II, 1882, p. 56.

The type is in the Neumoegen Collection and has been examined by me. It is allied to *S. rubristigma*. The margins of the wings are very narrow; the discal bar is straight, very narrow, and yellow outside. The black abdomen has four yellow bands, one on the second segment, a broader one on the fourth segment, and one on each of the sixth and seventh segments. Expanse, 16 mm.

*Habitat*: Arizona.

***Sesia morula* (Hy. Edw.).**

*Ægeria morula* HY. EDWARDS, Papilio, Vol. I, 1881, p. 196.

Only a single specimen of this species is known to exist, and the type is in the Neumoegen Collection. It is a distinct species.

*Habitat*: Texas.

***Sesia verecunda* (Hy. Edw.).**

*Ægeria verecunda* HY. EDWARDS, Papilio, Vol. I, 1881, p. 190.

A very distinct and aberrant species. The types are females and the male is unknown, and when known probably a new genus will have to be erected for the species.

*Habitat*: Colorado.

***Sesia edwardsii* Beuten.**

*Ægeria edwardsii* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 92.

A distinct species allied to *Sesia verecunda*.

*Habitat*: Colorado.



**Sesia candescens** (Hy. Edw.).

*Ægeria candescens* HY. EDWARDS, Papilio, Vol. II, 1882, p. 123.

Only known by a single male in the Neumoegen Collection. It is a good species.

*Habitat*: Arizona.

**Pyrrhotænia behrensii** Hy. Edw.

*Pyrrhotænia behrensii* HY. EDWARDS, Papilio, Vol. II, 1882, p. 123; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 26.

*Pyrrhotænia elda* HY. EDWARDS, Ent. Am. Vol. I, 1885, p. 49.

The specimens described as *P. behrensii* are the males of *P. elda*.

*Male*.—Head black, with a green lustre; palpi red; thorax metallic blue black; fore wings opaque, metallic blue black, inner margin bright red. Hind wings transparent, with a very narrow border, fuscous, bright red at the base along the inner margin. Abdomen blue black on the back of the first, second and third segments; remaining parts of the abdomen bright red. Anal tuft blackish on each side above. Expanse, 19–22 mm.

*Female*.—Similar to the male, but the hind wings are entirely covered with bright red scales.

*Habitat*: California.

**Pyrrhotænia fragariæ** Hy. Edw.

*Pyrrhotænia fragariæ* HY. EDWARDS, Papilio, Vol. I, 1881, p. 202; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 26, and Vol. VI, 1894, p. 95.

*Pyrrhotænia helianthi* HY. EDWARDS, Papilio, Vol. I, 1881, p. 203.

*Pyrrhotænia orthocarpi* HY. EDWARDS, Papilio, Vol. I, 1881, p. 204.

In the Museum Bulletin, Vol. V, p. 26, and Vol. VI, p. 95, *P. helianthi* and *P. orthocarpi* were united by me with *P. fragariæ*.

*Male*.—Head black; palpi orange; thorax metallic green; posterior tips of patagia orange; abdomen metallic green black; fourth, sixth and seventh segments on top and lateral edges of all the segments orange red; anal tuft orange red, black on each side above. Fore wings with borders and transverse discal mark metallic green black; transparent space in cell small, triangular, and the space beyond the discal mark rounded with the veins marked with green black; along the inner margin to about the middle of the wing runs an orange red streak. Hind wings transparent, costal margin orange, outer border fuscous. Expanse, 19 mm.

*Female*.—Similar to the male, but the fore wings are covered with metallic blue black scales, sometimes showing very slight traces of transparent spaces.

Hind wings transparent basally and orange outwardly, with the border and fringes fuscous. Expanse, 19-22 mm.

*Habitat*: Colorado and Nevada.

***Pyrrhotænia præstans* (Hy. Edw.).**

*Ægeria præstans* HY. EDWARDS, *Papilio*, Vol. II, 1882, p. 98.

This species looks much like *P. fragariæ*, but is larger, and is marked with orange in the cell and streaked with this color in the area beyond the discal mark. Expanse, 23 mm.

*Habitat*: Washington.

The type, a single male, is in the Neumoegen Collection.

***Pyrrhotænia polygona* Hy. Edw.**

*Pyrrhotænia polygona* HY. EDWARDS, *Papilio*, Vol. I, 1881, p. 202; BEUTENMÜLLER, *Bull. Am. Mus. Nat. Hist.*, Vol. VI, 1894, p. 95.

*Pyrrhotænia meadii* HY. EDWARDS, *Papilio*, Vol. I, 1881, p. 204.

This species was erroneously described as a male. The type is a female, and the examples described as *P. meadii* I consider to be the males of *P. polygona*.

*Male*.—Head and thorax metallic blue or green black; palpi bright red, tips black; thorax beneath with a red spot on each side anteriorly; abdomen metallic blue or green black; fourth, sixth and seventh segments bright red; lateral edge of abdomen also red; underside blue black. Fore wings metallic blue or green black; inner margin, to a little beyond the middle of the wing, red. Expanse, 18-20 mm.

*Female*.—Like the male, but has the hind wings red with a narrow border and fringes fuscous. Thorax with a red stripe on each side. Expanse, 20 mm.

*Habitat*: California.

***Pyrrhotænia achillæ* Hy. Edw.**

*Pyrrhotænia achillæ* HY. EDWARDS, *Papilio*, Vol. I, 1881, p. 203.

*Pyrrhotænia eremocarpi* HY. EDWARDS, *Papilio*, Vol. I, 1881, p. 203.

The only difference between the types of *P. achillæ* and *P. eremocarpi* is in size. Their markings and colors are absolutely identical. The expanse of *achillæ* is 15 mm., and of *eremocarpi* 18 mm. The insect is entirely metallic blue black, except the palpi at base, a spot on each side of the anterior part of thorax beneath, tips of patagia, a streak along inner margin of fore wings, and the middle of the anal tuft, red.

*Habitat*: California.

***Pyrrhotænia texana* Hy. Edw.**

*Pyrrhotænia texana* HY. EDWARDS, Papilio, Vol. I, 1881, p. 204; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. V, 1893, p. 26.

*Pyrrhotænia wittfeldii* HY. EDWARDS, Papilio, Vol. III, 1883, p. 156.

*Male*.—Head black; palpi orange; collar orange; thorax brown with an orange red stripe on each patagia and a transverse mark of the same color on the posterior edge of the thorax; abdomen brown, with an orange red band on the second, fourth, sixth and seventh segments; anal tuft mixed with orange hairs beneath; abdomen beneath orange from the fourth to the last segment. Fore wings brown with the transparent spaces quite small. Hind wings transparent, border very narrow. Expanse, 19–21 mm.

*Female*.—The fore wings are opaque, brown, without the transparent spaces, and the abdomen lacks the orange red band on the sixth segment; anal tuft without orange hairs beneath, otherwise same as the male. Expanse, 22 mm.

*Habitat*: Florida and Texas.

***Pyrrhotænia floridensis* Grote.**

*Pyrrhotænia floridensis* GROTE, Can. Ent. Vol. VII, 1875, p. 174.

*Male*.—Head brown, palpi and collar orange red; thorax brown with an orange red spot on each side beneath and an orange red mark on the posterior edge of the thorax above. Abdomen brown with an orange red band on the second, fourth, sixth and seventh segments; anal tuft brown. Fore wings deep brown, orange red in the cell and in the area beneath the median vein; beyond the indistinct discal mark the wing is also streaked with orange red. Hind wings transparent, border brown, narrow. Legs alternately blue black and orange red. Expanse, 14 mm.

*Female*.—Similarly colored as the male, but the discal spot is distinctly orange, and the abdomen lacks the band on the sixth segment. It is also larger and the wings are broader. Expanse, 18 mm.

Only the type male has hitherto been known. The female was given to us by Mrs. A. T. Slosson, who captured three examples in Florida on Scrub Oaks.

***Pyrrhotænia geliformis* (Walker).**

*Aegeria geliformis* WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 46.

*Pyrrhotænia geliformis* GROTE, New Check List of Moths, 1882, p. 12.

Head, thorax, legs, fore wings and first segment black with a violet blue reflection, remaining segments of abdomen above and below bright red; anal tuft mixed with a little black. Expanse, 15 mm.

*Habitat*: Florida and Mexico.

***Pyrrhotænia sapygæformis* (Walker).**

*Egeria sapygæformis* WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 45.  
*Pyrrhotænia sapygæformis* GROTE, New Check List of Moths, 1882, p. 12.

Allied to *P. geliformis*. Head black, palpi and collar red; thorax black with a red mark posteriorly above and a red spot on each side of the anterior part beneath. Abdomen black, fourth to last segments red above and below; anal tuft black. Legs black and red. Fore wings marked with red in the cell and beneath the median vein. Expanse, 17-19 mm.

*Habitat*: Florida.

***Pyrrhotænia animosa* Hy. Edw.**

*Pyrrhotænia animosa* HY. EDWARDS, Papilio, Vol. III, 1883, p. 156.

*Male*.—Head black; palpi red mixed with black hairs; thorax black, posterior half of patagia red, also a red spot on each side beneath; abdomen blackish, sixth and seventh segments red; lateral edge of abdomen red from fourth to the last segment; anal tuft black laterally. Fore wing greenish black, with a red streak along the inner margin. Hind wings transparent, border narrow, blackish. Expanse, 20 mm.

*Female*.—Differs from the male by being wholly greenish black, except the palpi, inner margin and fore wings and lateral edge of abdomen red. Expanse, 17-19 mm.

*Habitat*: Arizona.

***Pyrrhotænia subærea* Hy. Edw.**

*Pyrrhotænia subærea* HY. EDWARDS, Papilio, Vol. III, 1883, p. 156.

Head and thorax deep brown; antennæ with a yellow spot one-third before the tip; palpi yellowish, abdomen brownish, scaled with yellow, and with traces of bands on the fourth, fifth, sixth and seventh segments; anal tuft mixed with yellow; thorax with a yellow spot on each side of the posterior part. Fore wings purplish brown sprinkled with yellow scales; hind wings purplish brown, transparent at the base; all the wings beneath sprinkled with yellow scales. Expanse, 14 mm.

The type is in the Neumoegen Collection, and is in poor condition, and the original description is too brief for recognition of the species. The above description was taken from a male in fair condition sent to me by Prof. Barrows.

*Habitat*: Arizona.

**Carmenta pyralidiformis (Walker).**

*Egeria pyralidiformis* WALKER, Cat. Lepid. Br. Mus. pt. VIII, 1856, p. 44.

*Carmenta pyralidiformis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 184.

*Sesia nigella* HULST, Bull. Brooklyn Ent. Soc. Vol. III, 1881, p. 75.

Violet brown ; palpi and collar yellow ; thorax with a narrow yellow stripe on each patagia, and a yellow spot on each side of the thorax beneath. Abdomen with the fourth segment bright yellow in the female and in the male with an additional narrow yellow ring on the sixth segment. Fore wings opaque ; hind wings transparent. Expanse, 15-21 mm.

*Habitat*: Canada to Texas.

**Carmenta sanborni Hy. Edw.**

*Carmenta sanborni* HY. EDWARDS, Papilio, Vol. I, 1881, p. 185.

Bronze black. Fore wings opaque, with a very small white space beyond the cell ; beneath they are yellow for about their basal half and the white spot from above repeated. Hind wings transparent ; palpi, fore femora and posterior edge of the second and fourth abdominal segments yellowish white. Expanse, 18 mm.

*Habitat*: Massachusetts.

**Carmenta nigra Beuten.**

*Carmenta nigra* BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist. Vol. VI, 1894, p. 95.

Black ; wings opaque ; hind wings somewhat transparent at the base. Palpi, collar, fore femora, and a narrow band on the second, fourth and sixth segments white. The fore wings also marked with white in the cell and in the area beyond the discal spot. Expanse, 15 mm.

*Habitat*: Utah.

**Carmenta ruficornis Hy. Edw.**

*Carmenta ruficornis* HY. EDWARDS, Papilio, Vol. I, 1881, p. 184.

*Carmenta minuta* HY. EDWARDS, Papilio, Vol. I, 1881, p. 185.

The type of *Carmenta minuta* is in the Tepper Collection in the Agricultural College of Michigan, and was sent to me for examination by Prof. Barrows. It is the male of *Carmenta ruficornis*, the type of which is a female, and not a male, as described by Hy. Edwards.

*Habitat*: Georgia.

***Zenodoxus palmii* (Neumoegen).**

*Larunda palmii* NEUMOEGEN, Ent. News, Vol. II, 1891, p. 108.

This species was described as a *Larunda* (*Gaëa*), but it would be better placed in the genus *Zenodoxus*, to which it is very closely allied if not identical.

*Habitat*: Arizona.

***Zenodoxus canescens* Hy. Edw.**

*Zenodoxus canescens* HY. EDWARDS, Papilio, Vol. I, 1881, p. 205.

A very distinct species, differing from all the rest of the known species of *Zenodoxus*. It is wholly ash gray sprinkled with darker gray. The hind wings are transparent, with a gray border. Expanse, 21 mm.

*Habitat*: Arkansas.

***Zenodoxus heucherae* Hy. Edw.**

*Zenodoxus heucherae* HY. EDWARDS, Papilio, Vol. I, 1881, p. 205.

*Zenodoxus potentillae* HY. EDWARDS, Papilio, Vol. I, 1881, p. 205.

The types of *Zenodoxus heucherae*, four in number, in the Edwards Collection, are all males, and the types of *Zenodoxus potentillae*, also four in number, are all females, and I strongly suspect that the latter is nothing more than the other sex of the former. If not, it is very likely only a variety. It differs from *heucherae* by having a few reddish scales scattered over the wings and the legs banded with red; in *heucherae* the scales on the wings and the bands on the legs are yellow. Expanse, 13-18 mm.

*Habitat*: Lake Tahoe, Sierra Nevada, California.

***Zenodoxus maculipes* G. & R.**

*Zenodoxus maculipes* GROTE & ROBINSON, Trans. Am. Ent. Soc. Vol. II, 1868, p. 184.

Allied to *Z. heucherae*. Bronzy brown; palpi and collar pale yellowish; abdomen with a yellowish band on the first and fourth segments; hind tibiae with a yellow ring. Expanse, 20 mm.

*Habitat*: Texas.