

Society as a Vice President of the Washington Academy of Sciences.

The first paper of the evening, "New Microlepidoptera from Mexico," by August Busck, was read by title.

The second paper was "Observations on the Codling Moth," by A. G. Hammar.

The last paper was "An Old Question," by S. A. Rohwer.

NEW MICROLEPIDOPTERA FROM MEXICO.

BY AUGUST BUSCK.

The following new species are part of extensive collections of Lepidoptera, received from Mr. R. Müller in Mexico City.

The species here described are not represented in the material treated in Lord Walsingham's part of the *Biologia Centrali-Americana*, now soon to be concluded, and are published now so as to be available for the final list of species in that paper.

Genus METOPLEURA, new (Gelechiidæ)

Type: M. potosi Busck.

Second joint of labial palpi very long, porrected, but slightly curved upward, clothed with compressed scales, which form somewhat roughened sharp anterior and posterior edges; terminal joint one-third as long as second, compressed, pointed. Maxillary palpi rudimentary. Tongue well developed, scaled, spiraled. Antennæ simple, shorter than the fore wings. Fore wings ample, elongate; costa and dorsum straight, parallel; apex produced, pointed; termen oblique, slightly sinuate below apex. 11 veins; 7 and 8 coincident, to costa; rest separate; 2 from before apical third of the cell; 3 and 4 approximate from the end of the cell; 11 from the middle of the cell; 6, 7, 8, 9, and 10 equidistant; 1 furcate at base.

Hind wings much broader than the fore wings; costa and dorsum nearly straight; apex bluntly pointed; termen evenly rounded, with a slight sinuation below apex. 8 veins; 3 and 4 closely approximate, nearly connate; 6 and 7 approximate; 5 cubital; 8 anastomosing with radius before the middle of the cell. Posterior tibiæ nearly smooth, but somewhat rough-scaled above.

Allied to and rather similar in general habitus to *Acrotypia* Walsingham, but differing in the palpi, and in having veins 7 and 8 coincident in the fore wings.

In my synoptic generic table this genus runs to *Harpagidia* Ragenot, which is unknown to me in nature, but which would seem to agree with the present genus in venation; the very different labial palpi with the short terminal joint will sufficiently differentiate the present genus.

Metopleura potosi, new species.

Labial palpi light straw-colored, speckled with fuscous. Antennæ light fuscous. Face, head, and thorax light ochreous. Fore wings ochreous, longitudinally streaked along the vein, with lighter whitish ochreous. From near the base of costa runs an outwardly oblique blackish fuscous streak across half the wing and at apical fourth on the dorsal side is found a poorly defined blackish streak, parallel with termen; both of these markings are easily rubbed off and the majority of the long series before me shows only traces of them. There is a series of poorly defined dark marginal dots around apical and terminal edge. Cilia ochreous mixed with dark fuscous. Hind wings shining, dark fuscous with a light ochreous marginal line on the base of the cilia. Abdomen ochreous fuscous. Legs ochreous speckled with fuscous.

Alar expanse, 30 to 36 mm.

Habitat: Cerritos, San Luis Potosi, Mexico, August. R. Müller, collector.

Type: No. 14523, U. S. National Museum.

Cotypes in British Museum.

Ethmia proximella, new species.

Labial palpi white; second joint dusted with black exteriorly. Face and head white. Thorax white with four bluish-black dashes, two anteriorly, two posteriorly. Fore wings white with a broad black costal edging, widest on the middle of the wing; the line between this black costal part and the white dorsal part of the wing is zigzagged and irregular. On the white dorsal part of the wing are a number of round bluish-black dots, of which one is near base, one on the middle of the cell and one on the fold obliquely below; then come three dots in an oblique row, the first on the middle of dorsum, the last on the lower edge of the cell; after these there is further out another oblique row of three equidistant dots and parallel with the terminal edge is an irregular double row of less clearly defined dots. The extreme terminal edge golden yellow. Cilia white with dusky tips. Hind wings smoky white, in the male with a large yellowish costal tuft. Abdomen dark fuscous with yellow tip. Legs ochreous white; tarsi with strong black annulations.

Alar expanses, 17 to 20 mm.

Habitat: Tehuacan, Mexico. R. Müller, collector.

Type: No. 14524, U. S. National Museum.

Cotype in British Museum.

This species was sent me by Mr. Müller as *Ethmia mülleri* Busck, which it resembles in size and ornamentation; it is, however, easily distinguished by the more numerous black dots on the fore wings (in *mülleri* there are only six in three pairs), by the lack of the well-defined terminal series of black dots, and by the presence of the golden terminal line.

The species is even more similar to *E. bittenella* Busck, which is best distinguished from it by the irregularity of the form of the black dots as well as their quite different positions.

***Ethmia abdominella*, new species.**

Labial palpi white, dusted and barred with black. Face leaden-white with a large black dot on the vertex and head. Thorax dirty leaden-white, with six black dots. Forewings with costal half dark blackish brown with scattered black longitudinal streaks and with irregular black prominences into the lighter lead-colored dorsal half, which contains three independent black spots. A series of black dots along apical and terminal margin. Cilia dirty white. Hind wings whitish, semitransparent on basal half, with smoky tip and terminal edge. Abdomen golden yellow. Legs dirty white; tarsal joints with indistinct black annulations.

Alar expanse, 30 mm.

Habitat: Tehuacan, Mexico. R. Müller, collector.

Type: No. 14525, U. S. National Museum.

Nearest to *E. arctostaphylella* Walsingham, but easily differentiated by its larger size and darker head and thorax, also by its additional black spots in the light dorsal portion of the wing.

Genus CALANTICA Zeller.

Type: *albellu* Zeller.

This genus must, I believe, be included in the family Hemerophilidæ. The type, *Calantica albella* Zeller, has the following generic characters:

Antennæ less than the length of the fore wings, simple. Labial palpi long, thin, weak, upturned, reaching vertex; terminal joint nearly as long as second, tolerably pointed. Fore wings broad, with slightly arched costa, pointed apex, well-defined tornus, and slightly sinuate termen; 12 veins, all separate; 7 to termen; one of my slides shows veins 2 and 3 stalked; in another they are closely approximate. Hind wings are broad as the fore wings; 8 veins; 3 and 4 stalked; 6 and 7 parallel.

In this connection I would call attention to the genus *Herrickia* Staudinger, which in the European check-lists has been placed in the Hyponomeutidæ close to *Calantica* Zeller; if, however, the single specimen of the type of this genus, *excelsella* Staudinger, in the U. S. National Museum is authentic, as it presumably is, determined and labeled by O. Hoffman, this genus belongs to the Cœphoridæ and agrees well with my later genus *Fabiola* in venation and oral characters. As the general habitus is rather different, I prefer not to make *Fabiola* a synonym on the evidence of a single specimen, but the genus should be kept in mind in the future study of the family Cœphoridæ.

Calantica argentea, new species.

Labial palpi ochreous white. Face, head, and thorax silvery white. Fore wings shiny silvery white with a single short dark-brown dash on the lower corner of the cell; in some specimens with a few single scattered brown scales on the outer part of the wing. Cilia white. Hind wings silvery white with a slight smoky tinge. Abdomen white. Legs white sparsely dusted with fuscous scales and with last tarsal joint dark fuscous.

Alar expanse, 18 to 23 mm.

Habitat: Orizaba, Mexico, August. R. Müller, collector.

Type: No. 14527, U. S. National Museum.

Cotype in British Museum.

Tortrix urbana, new species.

Labial palpi reddish brown with darker tips. Face, head, and thorax reddish brown; antennæ light brown, faintly annulated with black. Fore wings light reddish brown with numerous scattered black scales tending to arrange themselves as a transverse striation. A large oblique dark-brown transverse fascia from about the middle of costa to tornus is narrowest at the costal end and gradually broadens with bulging edges towards the dorsal side. Across the tip of the wing from apical fourth of costa to the middle of termen is another dark brown fascia, which is broadest on the costal edge. Hind wings light ochreous white. Abdomen ochreous fuscous. Legs ochreous; anterior tarsi heavily annulated with black.

Alar expanse, 16 to 19 mm.

Habitat: Mexico City. R. Müller, collector.

Type: No. 14526, U. S. National Museum.

Cotype in British Museum.

A common-looking species of the *triferana* Walker group, differing from this species in the more reddish ground color and the lack of light ochreous patches.

Atteva exquisita, new species.

Labial palpi white with a bluish-black annulation at the end of second joint and with bluish-black tip of terminal joint. Antennæ black. Face white with a black transverse line. Head also white, with a black transverse line. Collar white with black anterior edge. Thorax reddish golden-yellow with white posterior tip and four black lateral dots. Fore wings with the rich reddish golden yellow ground color apparent only in the transverse fascia between the large silvery white spots, which occupy the greater part of the wing surface; extreme base of the wing red; then follows a large transverse silvery white fascia edged with dark metallic blue and with a serpentine metallic blue transverse line through the middle; next comes a reddish-yellow fascia at basal third, which is followed by another large silvery white transverse fascia, like the foregoing, edged with metallic blue and with a blue central line; following this is again a reddish-golden fascia, somewhat bent in the middle, and this is followed by a large dorsal silvery-white spot and by an adjoining small costal

white spot, both with a crooked blue line in the center and both edged with dark metallic blue. On the apical part of the wing are two costal white spots and one white fascia, separated and surrounded by metallic blue lines. Extreme apical tip golden yellow. Hind wings semitransparent, light fuscous with dark veins. Abdomen black with a conspicuous yellowish-white spot on the underside of each segment. Legs black, with narrow yellowish-white annulation at the joints.

Alar expanse, 21 mm.

Habitat: Mobano, Coahuila, Mexico, August. R. Müller, collector.

Type: No. 14528, U. S. National Museum.

This species belongs to the *aurca* group, but differs considerably from any described species in the pattern of the fore wing as well as in the white color of the spots. One of the specimens, it should however be noted, has a straw-yellow tint over the outer white spots.

—Mr. A. G. Hammar presented a paper on certain habits of the codling moth larva, relating to the reconstruction of the winter cocoon in the spring, the number of molts of the larvæ, cannibalism among larvæ, temperature control, an unusual occurrence of two larvæ passing the second winter in hibernation, and the ability of some larvæ to subsist upon foliage. A brief account was also given on some of the main results of the codling moth investigation in Michigan, and the practical application of these findings. The full account of this investigation will be published as Bulletin 115 of the Bureau of Entomology, U. S. Department of Agriculture.

At the conclusion of Mr. Hammar's paper Mr. Rohwer asked if, in breeding the moths, the larvæ of the sawfly which lives in apple had been noticed. Mr. Hammar stated that he had not observed them. Mr. Rohwer said that larvæ are rather common in Europe and larvæ with similar habits have been found in Washington State. In the same genus there are also larvæ which live in plums and cherries.

In Mr. Hammar's paper were several allusions to temperature control on the codling moth. These allusions led Mr. Pierce to remark on the fact that although temperature has a definite effect upon development, it will be found that for any degree of temperature the development will vary with the humidity, this variation sometimes being of considerable degree.