

NOTES ON CYDOSIA AND CERATHOSIA.

BY JOHN B. SMITH.

Cydosia was first named by Westwood, without any very elaborate characterization, in the thirty-seventh volume of the Naturalist's Library, with *Tinea nobilitella* as sole species and therefore type.

In the second volume of the catalogue Lep. Heterocera in the British Museum, p. 524, Walker describes the genus as follows: "Has some resemblance to Crambus and other pyralites. Body rather stout, not long; palpi short, pubescent; third joint conical, less than half of the second; proboscis short; antennæ slender, testaceous, bare, rather more than half the length of the body; abdomen extending a little beyond the hind wings; legs rather stout; hind tibiæ with four long spurs; wings narrow, rather long; fore wings hardly convex in front, very slightly oblique along the apical border; hind angle slightly rounded; first, second, and third inferior veins very near together at the base; fourth very remote from them."

C. nobilitella Cram. is still the sole species and is credited to the West Indies and various South American points. It forms a part of the assemblage classed by Walker as *Lithosiidæ*.

In 1868 Messrs. Grote and Robinson describe *Cydosia aurivitta* from Texas, and distinguish it from what they identify as *nobilitella* by the lack of determinate white spots, the golden bands alone remaining. The genus is here placed in the family *Zygaenidæ*, subfamily *Zygaeninae*. Without giving any new characters they refer to its systematic position thus: "The present genus we regard as related to *Apistosia* Hübner, and forming one of a low group of zygaenid genera with simple antennæ and elongate wings, which latter, when at rest, the imago folds after the manner of *Lithosia*. This group is so laden with *Lithosian* analogies as to render its critical study difficult. *C. nobilitella* and *Oeta compta* mimic the Lithosian genus *Utetheisa*. *Deiopeia aurea* Fitch is probably a species of *Cydosia*. * * * Their metallic colors aid our conception of their true position." Messrs. Grote and Robinson here use the term "analogy" as Dr. Packard did in treating of *Ctenucha*, and they regard all the Lithosian features as coming under it and not as affinities. They fail, however, to give any zygaenid affinities save of color and wing form.

In view of subsequent developments it may be as well to note here that *Apistosia* Hb. is placed by its author among the *Lithosiidæ*, and *nobilitella* is referred to the genus *Crameria* and placed directly after *Utetheisa*, a point which has been overlooked, but which speaks well for Hübner's shrewdness in associating allied forms.

Mr. Stretch, in the Zygaenidæ and Bombycidæ of North America, p. 161, writes: "ZYGAENIDÆ—ZYGAENINÆ—Genus *Cydosia*." He gives a somewhat general description of the venation of primaries, but says nothing of the secondaries, the venation of which is so important in fixing the true position of these forms. He follows Grote and Robinson in their comments on its *Lithosiid* analogies, and also remarks on its resemblance to the *Tineidæ*. The species he leaves as they were, but suggests that the species identified as *nobilitella* by Grote and Robinson is not Cramer's species, but an allied one, for which he proposes the term *imitella*, should his suggestion prove correct. No differences are given, as Mr. Stretch, not having access to Cramer's works, could not with certainty identify his species. In 1873 Mr. Grote, in Bull. Buff. Soc. N. Sci., vol. 1, catalogues the *Zygaenidæ* of North America, including *Cydosia* therewith. He, however, makes it the type of a new subfamily, which he calls *Cydosiinæ*, containing this genus only. No characters are given, and no reasons for this separation. He accepts Mr. Stretch's view that the Texan form is not the same as Cramer's species from South America and the West Indies, but now suggests that the two species, *aurivitta* and *imitella*, are merely forms of one variable species.

Nothing is here added to our knowledge of the structure of the species.

In the list of 1882 Mr. Grote retains the same classification, and makes *imitella* Str. a variety of *aurivitta* G. & R. *Penthetria* Hy. Edwards is added to the *Cydosiinæ* without comment or question.

Recently Mr. Edwards removes his genus to the *Hetergynidæ*, quite erroneously in my opinion, though he was undoubtedly correct in breaking up the association with *Cydosia*.

In preparing my notes on the so-called Zygaenid genera, published in Trans. Am. Ent. Soc., 1885, vol. 12, pp. 77-84, I had no specimen of *Cydosia* at hand for study, and I simply referred to it as of uncertain location.

In the Stettiner Ent. Zeitung, 1885, vol. 46, pp. 203-208, Mr. H. B. Moeschler reviews my paper, and fully agrees with my disposition of the majority of the genera. Of *Cydosia*, which he appears to know well, he says it is unquestionably *Lithosiid*.

Recently, in a little lot of odds and ends shown me, I found a fragmentary, rubbed specimen of *C. aurivitta* and took the opportunity of glancing at the venation. I saw at once that the venation was, as Moeschler suggests, *Lithosiid*. This induced me to examine the Museum collection, which contains a considerable number of both *aurivitta* and *imitella*, and I was easily able to make out the entire venation, which was completely *Lithosiid*. An examination of the head, however, showed a prominent clypeal protuberance and very distinct ocelli, making the genus *Arctiid* and closely allied to *Cerathosia* Smith. From this latter it differs in lacking the claw of the fore tibia and the acces-

sory cell of the primaries, as well as in minor features of venation, wing form, etc.

These two genera—*Cydosia* and *Cerathosia*—furnish a very interesting and instructive part of our *Arctiid* fauna, combining as they do the habits of the *Lithosiidæ* and some of their peculiarities of venation, with the presence of ocelli, leaving the latter as the sole distinctive feature separating the *Arctiidæ* from the *Lithosiidæ*. With the *Zygænidæ*, *Cydosia* is analogous only in color, the affinities are all *Lithosian*, and Mr. Grote and his followers have allowed themselves to be blinded by this superficial character, which did not even deceive Hübner into overlooking the absolute agreement in all essential details with *Lithosia*.

As *Cydosia* and *Cerathosia* form a distinct group in the *Arctiidæ*, to which the term *Cydosiinæ* may continue to be applied, I will give in detail the characters of the genera and species, premising that the subfamily is distinguished by the narrow primaries, ample secondaries, and the conic protuberance of the clypens.

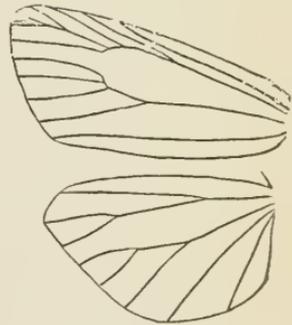
Genus *Cydosia* Westw. Dunc. Nat. Libr. 37, 193.

Head distinct, not prominent, the clypeal protuberance roughened in front, not depressed centrally. Palpi minute, not exceeding front, slender. Tongue strong, moderate in length. Antennæ simple in both sexes. Thoracic vestiture scaly, closely appressed. The legs are stout, tibiæ gradually becoming longer posteriorly; the median tibia with one pair, posterior with two pairs of spurs. Abdomen cylindric, stout. The genitalia will prove interesting, but they are small and not easily made out, and I have no material for dissection.

In detail the venation is as follows: Primaries, 12-veined; vein 1 free, not furcate at base; vein 2 from median, about three-fifths from base; veins 3, 4, and 5 nearly equidistant from the end of the median vein; vein 6 from the extreme end of the subcostal; veins 7, 8, and 9 on one stalk, 9 nearest to base, 7 and 8 forking very close to the apex; vein 10 from subcostal, as far from 7 as the latter is from 6; vein 11 from subcostal, three-fourths from base, free to costa; vein 12, the costal vein, from base, free, parallel to costa, which it joins three-fifths from base.

Secondaries lacking vein 5. Two internal veins as usual; vein 2 from the median, half way to its furcation forming veins 3 and 4; 6 and 7 formed by the furcation of the subcostal; vein 8 from the subcostal about one-third from base.

Mr. Edwards assures me that the Texan form is perfectly identical with the West Indian form which Cramer named *nobilitella*, and this name must therefore be restored and *imitella* Stretch cited as a synonym.



Venation of *Cydosia*.

C. nobilitella Cram. Pap. Ex. Pl. 264 f. G., *Tinea*; Hüb. Verz., p. 168, *Crameria*; Westw. Dunc. Nat. Libr. 37, p. 193, *Cydosia*; Wlk. Cat. Brit. Mus. Lep. II. 2, p. 523, *Cydosia*; Grt. & Rob. Trans. Am. Ent. Soc. II, p. 186, *Cydosia*; Stretch, Zyg. & Bomb., 162, pl. 7, f. 8, *Cydosia*.

imitella Stretch, Zyg. & Bomb., 163 et 242, an sp. dist. præc. Grote Bull. Buff. Soc. N. Sci., 1, 36, an var. *aurivitta*.

Var. *aurivitta* Grt. & Rob. Trans. Am. Ent. Soc., 2, 186, pl. 3, f. 68, *Cydosia*; Stretch, Zyg. & Bomb., 163, pl. 7, f. 9, *Cydosia*.

Head, thorax, and abdomen bluish or greenish black, metallic, with white spots arranged as follows: A spot on the vertex; two small dots at base of antennæ; a few white scales on front and palpi; collar nearly all white; patagiae with two spots each; disk of thorax with five dots. Beneath the legs are maculate with white and numerous whitish hair lighten up the breast. Anal segment of the male ringed with bright fulvous scales.

Primaries bluish or greenish black, metallic; a golden-yellow costal stripe from base to a point over the inception of the first transverse band; a broad, slightly oblique golden transverse band from the median vein down to inner margin, about one-third from base; another still broader transverse band of the same color rather close to and nearly parallel with the outer margin. A subquadrate spot of the same color beyond the middle of the cell, filling the space between the ordinary spots which here are obsolete. Between these prominent deep golden markings are white spots and patches as follows: A dot at base; an elongate spot below the internal vein not reaching the first transverse band; an elongate spot between vein one and the median vein, also not touching the transverse band; a large round spot in the cell, between the basal band and the discal spot; below this a smaller, also round spot; beyond the discal spot are two upright somewhat lunate spots before the outer transverse band, and below these is a large, subquadrate spot near the internal margin. Beyond the outer golden band is a series of white dots beginning with a curved series of three or four small dots on costa, then three larger and somewhat angular spots, the upper much the larger. A white line at base of fringes.

Secondaries immaculate somewhat darker than the primaries.

Beneath, primaries with a series of small apical white dots and white fringes, else black, immaculate; secondaries black, immaculate except as apex where the fringes are white marked.

Expands, .85-.90 inches=21-23^{mm}.

Habitat.—Texas.

The variety *aurivitta* is in every respect identical with the type form save that it completely lacks all the white maculation. Exactly what relation these two forms, which seem so distinct at first appearance, bear to each other is not yet known. They are not sexes, as we have both sexes of each; they seem to copulate readily, as we have ♂ of one and ♀ of the other taken *in coitu*. The variation is not gradual, for I

have seen nothing like real intergrades. The larval history, which might serve as a guide, is unknown as yet.

According to Belfrage, as quoted by Stretch, the insects fly in May and June. They are generally distributed through the State of Texas, though nowhere common; are generally taken on the wing in the day-time and are also attracted to light at night.

In the Museum collection we have eighteen specimens, about equally divided between the two forms, and ranging in dates of capture from the middle of March to the end of May. One specimen is dated August, which appears to indicate two broods.

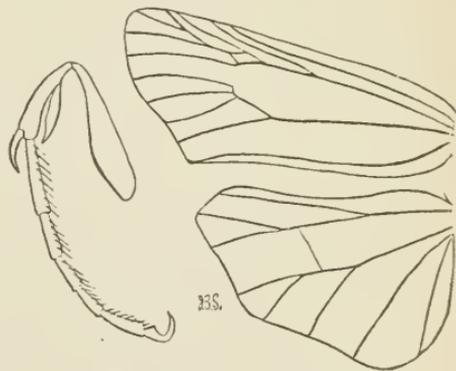
Cerathosia Smith. Entom. Amer., 1887, vol. 3, p. 79.

Body slender, graceful, untafted. Head distinct, rather prominent; palpi slight, reaching the middle of the front, the terminal joint minute. Tongue moderate in length. Eyes hemispherical, prominent; ocelli distinct. Antennæ simple in both sexes. Front depressed, excavated, with a circular, sharp, somewhat irregular rim; in the center of the depression is a cylindrical projection with a truncate and somewhat cup-shaped tip. Thorax ovate, with smooth, scaly vestiture. Abdomen elongate, slender, cylindrical, smooth. Legs slender, smoothly scaled, increasing in length posteriorly. Anterior tibia shortest, rather stout, with a moderately long, curved spine at tip; middle tibia with one pair, posterior with two pairs of spurs, not spinulose.

Primaries narrow, elongate, subequal, outer margin slightly oblique, arquate; 12-veined; accessory cell present; internal vein not furcate at base; veins 3, 4, and 5 nearly equidistant from the end of the median; 6 from lower margin of accessory cell; 7, 8, and 9 on a short stalk from the end of accessory cell, 8 to the apex, giving off 9 at about its middle; 10 from upper angle of accessory cell.

Secondaries large, rounded. Two internal veins; 2 from median at its outer third; 3 and 4 on a short stalk from the end of the median: 5 very weak, midway between 4 and 6; 6 and 7 from a short stalk at end of subcostal; the costal (vein 8) from the subcostal about two-fifths from base.

Supra anal plate of ♂ triangular; hook somewhat irregular, thickened



Venation and fore leg of *Cerathosia*.*

*The figure is incorrect in not showing vein 5 of secondaries; the vein is midway between 4 and 6, and is very weak—so weak as to be invisible in the recent mount in Canada Balsam, and in the best instance almost obsolete. The drawing was made from two slides newly mounted.

in the middle, with a pointed tip, but little curved. Side pieces subequal, with an obliquely curved tip.

C. tricolor Smith. Entom. Amer., 1887, vol. 3, p. 79.

Head, thorax, and primaries above, glistening pure white, spotted with black; secondaries and abdomen uniform glistening clay-yellow.

Palpi black tipped; tip of frontal projection also black; a black spot at the inner base of antennae. Collar with a black dot each side of the middle; thorax with four black spots, two on each side of the middle; patagiae with two black spots.

Primaries with black powderings along costa, forming an elongate costal patch at outer third, in which are three white costal dots. The black spots on primaries are rather irregularly arranged and variable; there is a series along the median vein and another along the subcostal; in some specimens there are two rather indistinct transverse bands formed. At outer fourth is usually a sinuate, narrow, black transverse line, often broken up into spots and sometimes not traceable as a line; there is some difference, too, in the form of the line when it is present. A series of intra-venular spots parallel to and not far from outer margin always present; a series of terminal lunules; fringe white. Secondaries and abdomen immaculate. Beneath, secondaries and abdomen as above; abdomen with a more or less complete series of narrow black spots on each side of the middle. Legs white, black marked. Tarsi black or brown, ringed with white. Primaries yellow to near outer margin, where it is separated from the white terminal space by a broad blackish shading which extends inward on the costa. A series of black terminal lunules.

Expands, 1-1.37 inches=25-35^{mm}.

Habitat.—Texas.

This species seems locally common. It has been received by a number of collectors as well as by myself, but all the specimens are from the same source in southwestern Texas. It was collected at light. The armed fore tibia, combined with the clypeal protuberance, are, I believe, unique in the *Arctiidae*.