NOTES ON THE GRASS-FEEDING HEMILEUCAS AND THEIR ALLIES.

[Lepidoptera; Saturniidæ.]

By Harrison G. Dyar.

The discovery by Professor Cockerell that a species of *Hemileuca* feeds upon grass in the larval state (Psyche, VIII, 298, 1898) was an interesting addition to our knowledge of the food-plants of species of this genus. Recently it has transpired that the species is of economic importance by destroying the pastures and so injuring the cattle industry. Considerable interest in the matter has therefore developed, and I have been asked by Mr. Webster to look into the specific identity of the form concerned. This has been described by Professor Cockerell as *Hemileuca sororia* race *oliviæ*, with its habitat in New Mexico. The species *sororius* was described by Henry Edwards from a single female from La Paz, Lower California. A third form, which has been listed also as a race of *sororius*, was described from a single female from southwestern Arizona under the name *hualapai* by B. Neumoegen. Allied forms extend well throughout Mexico as far south as the State of Vera Cruz, and one divergent form is before me from Paraná, Brazil. On comparison of all the known forms of *Hemileuca* allied to our grass-feeding species, I have reached the conclusion that the three names in our list, *sororius*, *hualapai*, and *oliviæ*, represent distinct species, not races of one species. Therefore the name *sororius* will hereafter be omitted from the North American list, while *hualapai* and *oliviæ* will be contained therein as distinct species. I am inclined to the opinion that all of the species here listed will be found to feed upon grass as larvæ, except perhaps the aberrant species *dukinfieldi* Schaus. The species referred to may be separated as follows:

Table of Species of the Hemileucæ Allied to Oliviæ.

Veins of the wings lined with ocher yellow:
  Ground-color of fore wing blackish, inner line absent. *dukinfieldi* Schaus
  Ground-color of fore wing pale gray, both lines present.
    Hind wing without submarginal pale band..... *rubridorsa* Felder
    Hind wing with submarginal pale whitish band.
      Larger: disk of thorax roseate; discal mark of fore wing narrow..... *norba* Druce
      Smaller: disk of thorax gray; discal mark of fore wing large, white..... *minette* Dyar

Veins of the wings concolorous :
Costa of fore wing above ocher yellow.
Secondaries pale, whitish in the male, rose-color in the female.
Lines of the fore wing faint, the inner one obsolete.
hualapai Neumoegen
Lines of the fore wing distinct, both present.
Hind wing of male with no, or very faint, mesial band.
mania Druce
Hind wing of male dusky shaded, with mesial and marginal bands rather distinct..... *lares* Druce
Secondaries dark rosy brown.
Smaller, with much rosy tint..... *numa* Druce
Larger, with little rosy tint..... *nitria* Druce
Costa of fore wing concolorous or partly whitish.
Pale, the male largely whitish, the lines of fore wing diffused..... *oliviæ* Cockerell
Darkly colored, the lines of the fore wing distinct.
Inner line not angled in the middle.
Discal mark yellowish brown..... *sororius* Hy. Edwards
Discal mark white or whitish.
With much rosy tint; discal mark narrow and clouded..... *marillia* Dyar
With little rosy tint; discal mark large, distinct.. *lex* Druce
Inner line distinctly angled or the upper limb obsolete.
mexicana Druce

Hemileuca dukinfieldi Schaus.

Hemileuca dukinfieldi Schaus, Proc. Zool. Soc. Lond., 1894, 235.

Described from Castro, Paraná, Brazil. The types are before me. This species is only distantly related to the forms here treated, and is included as the extreme development of this type.

Hemileuca rubridorsa Felder.

Hemileuca rubridorsa Felder, Reise der Novara, pl. 90, fig. 2, 1874.

Felder's description is without definite locality; his figure represents a female. A female specimen from the Schaus collection is before me labeled "Mexico," without definite locality. It is also labeled "*Eulcucophæus norba* Druce," but it differs from that in the uniform gray hind wings without submarginal pale band and in the broader yellow costa. It agrees well with Felder's figure. A male also is before me, collected by Mr. R. Müller in Mexico City, which enables a definite location for the species.

Hemileuca norba Druce.

Euleucophæus norba Druce, Biol. Cent.-Am., Lep. Het., II, 420, 1897.

Described from Amecameca, State of Morelos, Mexico. The type is before me, but no other specimens.

Hemileuca minette, new species.

Front of head ocher, sides and behind crimson, thorax gray, abdomen dark red. Fore wing dark gray, the veins and costa dark ocher, fringe and inner margin pale; lines somewhat approximate, whitish, distinct, approximately parallel to outer margin, the outer wavy crenulate; discal mark a large, white, diffused patch, bare of scales centrally. Hind wing gray, a whitish ray through the cell, a broad, distinct, outer whitish band; fringe pale, veins lined with dark ocher. Beneath the ocher markings are broadened, but the lines of fore wing nearly obsolete. Discal mark and submarginal band of hind wing distinct; base of fore wing shaded with crimson. Expanse 40 mm.

One male, Mexico, without definite locality (Schaus collection), probably from near Mexico City.

Type: No. 12931, U. S. National Museum.

This species, together with the two preceding, may prove to be varieties of one species. All apparently come from the high Mexican plateau in the vicinity of Mexico City. A large series of specimens is needed to decide the matter.

Hemileuca hualapai Neumoegen.

Euleucophæus hualapai Neumogen, Papilio, III, 138, 1882.

Described from a single female from southwestern Arizona. So far as I am aware, no other specimens are known and the male is undescribed. According to the description, the moth has a yellow costa and is therefore not allied to the other North American species, *oliviæ* Cockerell. Its nearest ally is the following, which, however, has a widely separated distribution:

Hemileuca mania Druce.

Euleucophæus mania Druce, Biol. Cent.-Am., Lep. Het., II, 420, 1897.

Described from Orizaba, Mexico. I have specimens from this place (Schaus collection) and from Motzorongo (R. Müller), both localities in the State of Vera Cruz, in the hot, moist country. The females are very rosy in color and must be very similar to *hualapai* Neum., but on the fore wings both the lines are distinct. The males vary considerably in

the amount of rosy tint on the wing, most of them being largely brown.

Hemileuca lares Druce.

Eulcucophæus lares Druce, Biol. Cent.-Am., Lep. Het., II, 420, 1897.

This is known to me only by Druce's figure. It is described from a single male from Durango City. This is on the western edge of the high table-land, in a climate similar to that of Arizona. The species should be intermediate between *maria* and *hualapai*, but unfortunately only the male of *lares* is known and only the female of *hualapai*, so that no useful comparisons can be made.

Hemileuca numa Druce.

Eulcucophæus numa Druce, Biol. Cent.-Am., Lep. Het., II, 421, 1897.

Described from Mexico City. I have specimens from there (Schaus collection) and also others sent by Mr. Müller from the same locality. The high table-land centering in the vicinity of Mexico City is evidently the stronghold of the species of *Hemileuca* of the grass-feeding group.

Hemileuca nitria Druce.

Eulcucophæus nitria Druce, Biol. Cent.-Am., Lep. Het., II, 421, 1897.

Described from "Mexico" without definite locality. I have no specimens of the species. It is apparently closely allied to *numa*, and may be a variety of that. Its relations cannot be well discussed without more definite knowledge of the exact locality.

Hemileuca oliviæ Cockerell.

Hemileuca sororia, race *oliviæ* Cockerell, Psyche, VIII, 252, 1898.

Described from Santa Fé, New Mexico. A large series of specimens is before me. This species has been made the subject of a special bulletin by the Bureau of Entomology, U. S. Department of Agriculture.[1]

Hemileuca sororius Hy. Edwards.

Eulcucophæus sororius Hy. Edwards, Papilio, I, 100, 1881.

Described from a single female from La Paz, Lower California, and otherwise unknown. It is very seldom that any

[1] Bul. 85, pt. v, Bureau of Entomology, U. S. Dept. of Agriculture, 1910.

specimens are received from this region, which accounts for the paucity of our knowledge of this form. It may be, and probably is, locally abundant.

Hemileuca marillia, new species.

Rosy brown to dull rose-color. Thorax rosy brown with whitish overcast. Fore wing with the costa more or less marked with whitish, but no ocherous; lines broad, distinct, whitish; discal mark narrow, whitish, obscure. Hind wing rosy brownish in both sexes, with an outer whitish diffused line. Beneath the lines faintly reproduced, the basal part of the fore wing red. Abdomen dark rose-red. Expanse: Male 50 mm.; female 60 mm.

Two males, two females, Tehuacan, State of Puebla, Mexico (R. Müller, No. 1753).

Type: No. 12932, U. S. National Museum.

This is closely allied to the following species, and may prove to be not specifically distinct therefrom. The present species comes from the southern end of the Mexican plateau, whereas *lex* has been found some 600 miles farther north. Specimens from intermediate points are needed to show the relationship of these forms.

Hemileuca lex Druce.

Euleucophæus lex Druce, Biol. Cent.-Am., Lep. Het., II, 420, 1897.

Described from a single male from Durango City at the foot of the Sierra Madre. The species is not before me, but it is interesting to note the similarity in location with that of the allied *oliviæ*. Both species inhabit high, arid land on the eastern slope of a mountain range.

Of the above twelve nominal species not including the aberrant *dukinfieldi* Schaus), eight are from the Mexican plateau (two without exact localities), six (two doubtful) from the lower and best known part of that region, two from the central portion in State of Durango. Of the outlying forms, one is known from the peninsula of Lower California, one from southwestern Arizona, and one from New Mexico, while but a single species occurs outside of the high arid regions, namely, *mauia* Druce, from the State of Vera Cruz. In the center of distribution several species may occur in the same general region, whether actually associated or not is not known; but in the outlying portions of the general area of distribution the species occur singly. Evidently the ancestor of these species was an inhabitant of the Mexican plateau, where the larvæ fed upon grass in the absence, practically, of

all other vegetation. The group has in general confined itself to regions of the same general character Full data are not at hand concerning the single species known from the lower moist region in the State of Vera Cruz. Such data could not fail to be of interest.

Hemileuca mexicana Druce.

Metanastria mexicana Druce, Biol. Cent.-Am., Lep. Het., I, 201, 1887.

Dendrolimus mexicana Kirby, Cat. Lep. Het., I, 816, 1892.

This species was described as a lasiocampid, but, although no specimens are before me, it is evident from Druce's apparently excellent figures that it is a saturnian and a member of this genus. The species was described from two specimens in the collection of the late Dr. Staudinger, and are without exact locality. I have therefore left them out of consideration in the above, especially as it seems doubtful whether the two sexes are correctly associated. The male is represented with a dark discal mark, the female with a pale one, and there are other differences that would not be expected in sexes of one species. It is certainly regrettable that so many of the specimens in collections of this interesting group of *Hemileuca* should be without exact localities, as it so much increases the difficulty of the study of the geographical distribution of the forms.

A NOTE ON HALISIDOTA CINCTIPES GROTE.

Some years ago I placed *Halisidota davisii* of Henry Edwards from Arizona as a synonym of *H. cinctipes* Grote from Cuba, and in this course Sir G. F. Hampson followed me in the British Museum catalogue. Very recently, however, the Hon. Walter Rothschild has separated *davisii* and *cinctipes* as species and has further proposed the name *underwoodi* for the dominant continental form. Certain differences between these forms are apparent, and it may be a matter of opinion whether they should be treated as species or subspecies. *Cinctipes* occurs in Cuba and southern Florida. As compared with the continental *underwoodi*, the markings are thin and poorly contrasted, the black edgings powdery and with whitish edges. The discal markings have a tendency to obsolescence, breaking from the costal marks in the Cuban specimens and absent in some Florida specimens. In *davisii* from Arizona the markings that are present are well contrasted, but all those beyond the disk are obsolete or absent.

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