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# The Canadian Entomologist.

VOL. XXI.

LONDON, SEPTEMBER, 1889.

No. 9.

## SOME TEXAS, ARIZONA AND CALIFORNIA MOTHS.

BY G. H. FRENCH, CARBONDALE, ILL.

### *Ameria Texana*, nov. sp.

Expanse .80 inch. Of the size and shape of *A. Unicolor*; the hind wings more rounded at anal angle, in that respect more like *Euphanessa Mendica*; body slender, antennæ pectinate; palpi slender, short, projecting beyond the front less than in *A. Unicolor*. Color uniform gray drab, the wings diaphanous, antennæ concolorous except the inside of pectinations at base where they are black, sides of head, back of eyes and a little at base of fore wings and abdomen slightly ochraceous.

Described from a single ♂ specimen from Hockley, Texas, from my friend Leopold Hartmann; his number 187.

### *Plusia Arizona*, nov. sp.

Expanse 1.50 inches Fore wings rich, shining, metallic golden, much like greater part of the wing of *P. Howardi*. It is marked with rich purple brown in three patches; the first basal triangular, small, reaching from the costa at the base to the posterior margin about one-fourth the distance from body to posterior angle; the second costal, quadrate, extending to median vein, one-fourth from base; the third costal, subquadrate, at the end of cell, partly within and partly beyond, spreading out towards apex; all three connected by a narrow costal margin of the purple brown. Fringe purple brown, cut with paler. Hind wings whitish, fringe the same, a dark hair line at base of fringe. Thorax pale as though purple brown washed with ochraceous, the ends of tufts darker; the outer patch on fore wings washed with ochraceous in its outer part.

Described from one ♂ from Arizona. This and another specimen were collected by H. K. Morrison in Arizona a number of years ago, and have been in my cabinet ever since. The other specimen may have been destroyed, as I do not find it now. This differs from *Howardi* chiefly in having one more purple brown spot. The basal spot or patch is broadest posteriorly, coming to a point on the costa.

### *Plusia Lenzii*, Behrens, MS.

Expanse 1.60 inches. This species is related to *P. Scapularis* Hy.

Edwards, in the position and somewhat the shape of the markings, but differs in color. General color fawn, with a purplish brown tint at the base above the cell and the basal portion of posterior margin. From the apex to the posterior angle extends a band about one-tenth of an inch wide of dark metallic golden, something of a golden sheen over the space from this band to end of wing; from the cell to posterior margin, between the t. a. and t. p. lines, in a patch that is brownish yellow, more distinctly yellow below the silver spot, this shade extending a little over the golden band at anal angle, the patch shaded with purplish brown at posterior margin near t. a. line; the most of the wing with a slight golden sheen. Silver spot short blunt boat-shaped, from median vein to fourth median veinlet. Posterior wings smoky, most prominent in terminal third.

Head and thorax fawn gray, hairs of second joint of palpi slightly rosy tipped, tufts of thorax with a brownish yellow tinge, the tips of scales of thoracic tufts and patagia lilac in side light.

Described from a single ♀ from Siskiyon, Shasta county, California, taken by my friend James Behrens and by him dedicated to our mutual friend, Dr. Henry Lenz, of Lubec, Germany.

*Arctia Shastaensis*, Behrens.

Since publishing the imperfect description of this form in the February



*Arctia Shastaensis*, Behrens. Female—natural size.

number of the current volume of the CANADIAN ENTOMOLOGIST, page 35, Mr. Behrens has sent me a fine colored drawing of the specimen made before it was mutilated by travel, and from which the accompanying wood engraving was made. From the drawing I am inclined to think that it is entitled to rank as a species, as the species of *Arctia* go. It is certainly widely separated from *Achaia* by its shape and markings, and from *Behrii* by its size as well as markings. The light parts of fore wings are yellow, with a slight indication of orange; the hind wings cherry red or near a crimson with black as indicated in the illustration. The abdomen is black on the sides and centre of dorsum with a subdorsal line of red. As shown by the antennæ and abdomen the specimen is a female.

*Arctia Genura*, Strecker.

Among some other specimens sent me by Mr. Behrens from Soda Springs, near Mount Shasta, California, are two other *Arctias* that I am

inclined to refer to the above species. But two examples of *Arctia Genura* have, so far as I know, been taken before, one male now in Mr. Strecker's cabinet, taken by myself in Gilpin county, Colorado, at about 8,500 feet elevation, and another female in my cabinet taken at the same place by Miss Lillie Lake. If these be the same it shows a wide range for the species in the high altitudes. Both specimens have three transverse bands on the fore wings, arcuate, the first and second reaching the hind margin, but the third at a point below the longitudinal stripe. Neither has the basal half line, but one has a few pale scales on the costa the same as the female from Colorado. The light marks on the fore wings of one are yellow with a slight orange tint, the hind wings red with two rows of small black spots and a narrow terminal border; the other has the light part of fore wings yellow, less orange tinted than the other, and the hind wings yellow, but with the black the same as on the other. The abdomens are wanting, but from their appearance I take them both to be males. It is with some doubt that I refer these specimens to *Genura*, as there is no indication of a fourth or basal half transverse line except the few pale scales on the costa of the lighter one, and the spots on the hind wings of these are smaller than in the ♂ of *Genura*, as figured by Mr. Strecker; but the species of *Arctia* are generally so variable, and these come so near the typical *Genura*, that I prefer to refer them to this species provisionally to creating a new species.

*Aegeria Pinorum*, Behrens MS.

Mr. Behrens sends me a colored drawing and a description of an insect to which he gives the above name. It comes from Monterey, in *Pinus Insignis*, from which larvæ have been obtained. From these larvæ he bred one specimen from which the drawing was made. He says the larva lives under the bark of the tree, feeding on the inner bark and perhaps outer wood. From the wound made by the larva, there is quite a flow of resin, the pupa being formed in the inner flakes of this resin. By detaching such flakes of resin, five or six inches long, about as wide and more than an inch in thickness, pupæ and larvæ have been discovered nicely ensconced in rounded holes next to the bark.

The wings are vitreous with golden scales scattered over the surface, the veins dark; legs dark and golden; body steel blue with six golden bands, the last the terminal tuft.

Mr. Behrens did not state whether the specimen was a male or a female, but I think from the drawing it was a male.

## EARLY STAGES OF GRAPTA J-ALBUM.

BY SHELBY W. DENTON, WELLESLEY, MASS.

Since the food plant and early stages of *Grapta j-Album* appear to be unknown, perhaps the following notes (incomplete as they are owing to my ignorance of the species larvæ I was rearing) may still be of some value and shed a little light on the early stages of this fine butterfly.

On May 17th of the present year, while passing a clump of white birches I noticed a leaf, on the upper surface and at the extreme end of which clustered a number of small caterpillars. They were dark brown, almost black, in color, covered with black spines and not much, if any, longer than a grain of wheat. Not knowing at the time what species of Lepidoptera they would eventually make, I simply plucked the leaf and took no further trouble to look for others, or the empty egg shells of these which must have been near at hand, as they were apparently out but a short time.

There were fifteen in all, and these were easily reared by keeping in a jelly glass, feeding with leaves of white birch until they grew too large for the glass, when they were transferred to an ordinary rearing cage. During the earlier stages they moved about very little, feeding side by side, but remaining quite motionless in the middle of the day.

Previous to moulting the last time, they became quite dormant, each one selected a leaf, covering the upper surface more or less with silk, thus partly curling the leaf, thereby hiding themselves within, and with head downward, remained in this position till the desired change took place.

In this stage, and in fact all along, no two were alike in color, although there was a general similarity between them. Perhaps they can best be described as greenish underneath, while the whole upper surface was brownish or almost black, with the exception of two yellowish or whitish lines along the back. Between the segments they were pinkish in color, with the spines along the upper surface still black and branching, those along the side having changed to yellowish green. Length at this stage, about  $1\frac{1}{2}$  inches and not quite as large around as a lead pencil.

In the last stage, and before pupating, the caterpillar became a translucent green, the white streaks on the back faded or disappeared, the base of the branching spines became light colored and the dark upper surface became less in extent and much paler, not so decided.

On June 7th the first one spun a button and attached itself, and by June 12th all were in a chrysalis state.

The pupa, after hardening, when held at arms length, appeared flesh colored, but on closer examination this tint was confined to the more exposed parts, and it was then seen to be of a beautiful clear green; yet they were not all alike in color, some being darker, some lighter than others, while several had a sort of bloom on them, as if dusted with flour, which gave them a whitish appearance, but all united in having six golden spots on their upper surface. Fully forty-eight hours before giving imago the colors of the future butterfly could be distinctly seen through the thin shell.

On June 20th, at 7 a. m., the first chrysalis gave a male imago, half an hour later another male followed, and by 7 p. m. nine had emerged, but of these only one proved to be a female. It was not till the butterfly appeared that I obtained positive knowledge of the species of insect I had been so fortunate as to rear, and then regretted the opportunity I had lost in taking full notes. I immediately sent one to Mr. W. H. Edwards in hopes it might reach him in the chrysalis state, and selected for this purpose the one last formed, but a postal from that gentleman a few days later informed me the imago had emerged while *en route*.

The following morning, June 21, two more had made their appearance, both females, and by 8 p. m. the remaining three, one of these proving a female, so that out of the fifteen I began with all were carried to the imago state without the loss of a specimen, except, perhaps, the one sent Mr. Edwards, which would doubtless have been perfect had it reached him in time.

I wish to call attention to the few females in comparison with the number of males (as I do not know the sex of the one sent Mr. Edwards that can be left out of the calculation), thus we have ten males and four females. That this proportion would hold good in a large number remains to be proven, but the uncommonness of the butterfly, as a rule, and the fact that none of mine were attacked by parasites, has led me to believe that it does, and possibly this may account for the scarcity of this fine insect. Also note that the males were the first to emerge.

The females can be distinguished at a glance, having the dark portion on the underside much lighter than in the male.

In conclusion:—It seems safe to say that the eggs are laid in small clusters in the latter half of April or first of May, and that search should be made for them at this time on the outermost leaves of the white birch, which is one, if not its only, food plant; that the larval state continues for at least three weeks, while that of the chrysalis about ten days.

## ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.

In pursuance of the call published in the CANADIAN ENTOMOLOGIST, in *Entomologica Americana*, and distributed by James Fletcher, President of the Entomological Club of the A. A. S., the following persons met in Toronto on August 28th, at 4 p.m.:—James Fletcher, Clarence M. Weed, A. J. Cook, L. O. Howard, John B. Smith, C. J. S. Bethune, H. Garman, W. Saunders, C. W. Hargitt, and others. Organization was effected by the election, upon motion of Prof. J. B. Smith, of Mr. James Fletcher as Chairman, and Clarence M. Weed as Secretary. Mr. Fletcher, in taking the chair, set out the advantages of organization, and urged the formation at the present time of an association that might be specially devoted to entomology in its economic aspect. Remarks to the same purpose were made by Prof. Cook, Prof. Smith, Mr. Weed, Mr. Howard, Dr. Bethune and Mr. Garman. After full discussion, Prof. Cook moved, seconded by Prof. Smith, that we do now decide to organize an "Association of Official Economic Entomologists." Carried unanimously.

Mr. Fletcher submitted a draft of a constitution drawn by Mr. Howard and himself, after consultation with others.

The proposed constitution was discussed clause by clause, amended and corrected, and finally adopted as a whole in the following shape:—

## CONSTITUTION.

1. This Association shall be known as the Association of Official Economic Entomologists.

2. Its objects shall be: (1) To discuss new discoveries, to exchange experiences, and to carefully consider the best methods of work; also (2) to give opportunity to individual workers of announcing proposed investigations, so as to bring out suggestions and prevent unnecessary duplication of work; (3) to assign, when possible, certain lines of investigation upon subjects of general interest; (4) to promote the study and advance the science of entomology.

3. The membership shall be confined to workers in economic entomology. All economic entomologists employed by the general or State Governments, or by the State Experimental Stations, or by any agricultural or horticultural association, and all teachers of economic entomology in educational institutions, may become members of the Association by transmitting proper credentials to the Secretary, and by authorizing him to sign their names to this constitution. Other persons engaged in practical work in economic entomology may be elected by a two-thirds

vote of the members present at a regular meeting of the Association, and shall be termed associate members. Members residing outside of the United States or Canada shall be designated foreign members. Associate or foreign members shall not be entitled to hold office or to vote.

4. The officers shall consist of a President, two Vice-Presidents and a Secretary, to be elected annually, who shall perform the duties customarily incumbent upon their respective offices. The President shall not hold office for two consecutive terms.

5. The annual meeting shall be held at such place and time as may be decided upon by the Association. Special meetings may be called by a majority of the officers, and shall be called on the written request of not less than five members. Eight members shall constitute a quorum for the transaction of business.

6. The mode of publication of the proceedings of the Association shall be decided upon by open vote at each annual meeting.

All proposed alterations or amendments to this constitution shall be referred to a select committee of three at any regular meeting, and, after a report from such committee, may be adopted by a two-thirds vote of the members present, provided that a written notice of the proposed amendment has been sent to every voting member of the Association at least one month prior to date of action,

(Signed) JAMES FLETCHER,

A. J. COOK,

JOHN B. SMITH,

CHARLES J. S. BETHUNE,

L. O. HOWARD,

CLARENCE M. WEED,

E. BAYNES REED,

H. GARMAN,

C. W. HARGITT.

The hour being late, Mr. Howard moved an adjournment to the 29th, after the meeting of the Biological Section of the A. A. A. S. Carried.

The Association met, pursuant to adjournment, at the call of the Chairman *pro tem*, at Scarborough Heights, near Toronto, at 4 p.m., Aug. 29th; the Chairman, Mr. Fletcher, taking the chair. On motion of Prof. J. B. Smith, seconded by Mr. L. O. Howard, the reading of the minutes of the meeting of the Committee organizing the Association was dispensed with, and resolved that the members present do sign the constitution as read and approved at the last meeting, and that by their action the Association of Official Economic Entomologists be, and is hereby duly organized. The following members then signed the Constitution in the order named:—James Fletcher, Chairman; A. J. Cook; John B. Smith; Chas.



J. S. Bethune ; L. O. Howard ; Clarence M. Weed ; E. Raynes Reed ; H. Garman ; C. W. Hargitt. The Secretary was authorized to transfer the signatures to the minute book of the Association, and to add the signatures of those who had expressed a desire to join in the work of the Association.

Letters were then read from Dr. F. Goding, Illinois, and Dr. J. A. Lintner, New York, expressing sympathy with and approval of the objects of the Association, and asking to be enrolled as members.

On motion of Prof. Smith, seconded by Mr. Weed, the election of officers was then proceeded with.

Prof. Smith nominated Prof. C. V. Riley as first President of the Association, stating that his recognized pre-eminent position as an economic entomologist, and his active interest in the work of establishing this Association, entitled him to the honor and recognition of the Association by election to that office. The nomination was seconded by Dr. Bethune and Mr. Weed, each stating the high claims of Dr. Riley to the position. On motion of Prof. Cook, seconded by Prof. Smith, Dr. Riley was elected by acclamation.

Prof. Smith nominated Prof. S. A. Forbes as 1st Vice-President of the Association. The nomination was seconded by Mr. Howard, and Prof. Forbes was elected by acclamation.

Mr. Weed nominated Prof. A. J. Cook as 2nd Vice-President of the Association. The nomination was seconded by Dr. Bethune, and Prof. Cook was elected by acclamation.

Prof. Cook then took the chair and the meeting was carried on under his presidency.

Mr. Howard nominated Prof. J. B. Smith as Secretary of the Association. The nomination was seconded by Prof. Hargitt, and Prof. Smith was elected by acclamation.

On motion of Prof. Smith, the President was authorized to appoint a committee of two to prepare such by-laws as may be deemed expedient, to be submitted for approval by the Association at its next meeting.

Prof. Cook appointed the Secretary and Mr. Howard as such committee.

On motion of Mr. Howard, it was resolved that the next annual meeting of the Association be held at the time and place where the Association of Agricultural Colleges and Experiment Stations next meets.

On motion of Prof. Smith, the Society then adjourned.

JOHN B. SMITH, Secretary.

## PRELIMINARY CATALOGUE OF THE ARCTIIDÆ OF TEMPERATE NORTH AMERICA, WITH NOTES.

BY JOHN B. SMITH, NEW BRUNSWICK, N. J.

The following paper is presented in order to get into shape the notes made by me at odd times for the five years last past. It includes, in the first place, all the references that I found to the species during that time, and such notes of synonymic interest as I have culled from the publications examined. It has also been my practice, as specimens came into my hands, to use such as were unfit for the cabinet, for purposes of study, and I have thus accumulated a great many notes, which I see no opportunity of using for some time to come, inasmuch as my studies on the *Noctuidæ* will probably fill very completely all the time I have for systematic work. To present these notes for the benefit of those having more time to follow these lines of study, and to rid myself of the accumulated slips and memoranda, I have put them into this form. As some of the species are not known to me in nature, and as the sequence in Mr. Grote's list is based on no natural characters that I have been able to discover, I have arranged them in alphabetical order for convenience of reference.

## Family ARCTIIDÆ.

The essential characters of the family are: Ocelli present, vein 8 of secondaries arising from the sub-costal at some distance from base. The former peculiarity separates them from the *Lithosiidæ*, the latter from the *Noctuidæ*. Usually, there is an accessory cell, but there are numerous exceptions to this. Typically, the venation of primaries is Noctuidous, save that the internal vein is not furcate basally. This, however, is a weak character. The secondaries are also very much as in the *Noctuids*, save for the origin of vein 8, which in the *Arctiids*, arises from the sub-costal instead of from the base. A somewhat well marked and characteristic feature is found in the loop of primaries receiving the frenulum of the male secondaries. It is very distinct and definite, arising from the space between the costal and sub-costal veins, and generally in the form of a heavy rope or band, reaching to the median space, where it is coiled to form a distinct ring into which the frenulum is inserted. In the female the frenulum consists of a bunch of three or more fine bristles, which are received into a loop formed of crossed scales in the median space of primaries.

The front is flat, except in the *Cydosiinae*, and the head is usually small. The tongue is variable, and quite often aborted or very weak. Thorax and abdomen are very variably developed. The antennæ furnish good characters for generic separation and sub-family groupings. They are sometimes very short, sometimes excessively long, and again moderate in length. In addition to what has been said of the venation it may be added, that two definite series are recognizable, based on the origin of vein 10 of primaries. In some genera it arises from the sub-costal before the end of the cell, in the others it is from the series at the end of the sub-costal. The legs afford good characters. The spurs of the middle and hind tibiæ are sometimes wholly or partly wanting, and sometimes the fore tibiæ are armed with spines or claws.

The genitalia will furnish excellent characters when studied. I have examined a number of species and find strong peculiarities. As the notes are too fragmentary and the characters need illustration as well as description, no reference is made to them.

Finally, it may be as well to disclaim completeness, either of references or description, though so far as the bibliography is concerned it is much more complete than anything heretofore presented.

#### Sub-family CYDOSIINÆ.

The characters of this sub-family have been given by me in the Proc. U. S. Nat. Mus., 1888, pp. 185-190. The produced tuberculate or roughened front constitute the isolating character. Vein 10 of primaries is from the sub-costal.

#### Genus CYDOSIA, Westw.

- 1841—Westw. in Jardine Nat. Lib., XXXVII, 193.  
 1854—Wlk., C. B. Mus. Lep. Het., II., 523.  
 1885—Moeschl., Stett. Ent. Zeit., XXXXVI, 206.  
 1888—Smith, Proc. U. S. N. Mus. XI., 187.

#### *C. nobilitella*, Cram.

- 1782—Cramer, Pap. Ex., III., pl. 264, f. G., *Tinca*.  
 1816—Hübner, Verz., p. 168, *Crameria*.  
 1841—Westw. in Nat. Libr. 37, p. 193, *Cydosia*.  
 1854—Wlk., C. B. Mus. Lep. Het., II., 523, *Cydosia*.  
 1866—H.-Sch., Corr. Blatt., XX., 119, is an *Agaristid*.

- 1869—Grt. and Rob. Tr. Am. Ent. Soc., II., 186, *Cydosia*.  
 1872—Stretch, Zyg. & Bomb., 162, pl. 7, f. 8, *Cydosia*.  
 1882—Smith, Proc. U. S. N. Mus., XI., 188, *Cydosia*.  
     *imitella*, Stretch.  
 1873—Stretch, Zyg. & Bomb., 163, et. 242, pl. 7, f. 8, *Cydosia*.  
 1873—Grt., Bull. Buff. Soc. N. Sc., I., 36, *Aurivitta* ?  
 1888—Smith, Proc. U. S. N. Mus. XI., 188, pr. Syn.  
     var. *aurivitta*, Grt. & Rob.  
 1869—Grt. & Rob., Tr. Am. Ent. Soc., II., 186, pl. 3, f. 68, *Cydosia*.  
 1872—Stretch, Zyg. & Bomb., 163, pl. 7, f. 9, *Cydosia*.  
 1888—Smith, Proc. U. S. N. Mus., XI. 188, an var. pr.

The relation of these forms to each other is fully discussed in my paper in Proc. U. S. N. Mus., above cited.

The species from Texas.

#### Genus CERATHOSIA, Smith.

- 1887—Smith, Entom. Amer., III., 79.  
 1888—Smith, Proc. U. S. N. Mus., XI., 189.

#### *C. tricolor*, Smith.

- 1887—Smith, Ent. Amer. III., 79.  
 1888—Smith, Proc. U. S. N. Mus., XI., 190.

The recent discussion on the location of this genus is not referred to. Vein 5 of secondaries is very faint, but yet distinctly present. In my original description, made from a fresh slide, the thin balsam had obliterated the vein. The ease with which such errors are made in the venation is illustrated by the fact that ever since Herrich-Schaeffer first used venation as a basis for family characters, *Ino* has been credited with three internal veins, by even the best European students. I was the first to demonstrate by bleaching the wings and mounting in balsam, that one of these veins was a mere fold; on the other hand, this method has the disadvantage of obscuring the recognition of weak veins, and I was caught napping in this genus. My figures of venation in the Proc. U. S. N. Mus., are from camera drawings, and vein 5 was not apparent there. The presence or absence of the vein, is, however, immaterial so far as any influence over the family reference is concerned.

The species is from Texas.

## Sub-family ARCTIINÆ.

This term as here used embraces all the other *Arctiidae*. I wish to say definitely, however, that I believe we have here at least three good sub-families, and the term is used here simply to separate off the *Cydosiinæ*, which have been properly limited.

Mr. Hy. Edwards uses the term *Pericopidæ* for the genera *Gnophæla* and *Melanchroia*, in Ent. Amer., III., 227, placing them between the families *Lithosiidæ* and *Arctiidae*. Mr. Grote, in his "New List," placed *Gnophæla* between *Ctenucha* and *Harrisina*; genera, with which it has not even a habitual, much less a structural resemblance, *Melanchroia* he omits altogether. I do not adopt Mr. Edwards's suggestion because I have not studied *Melanchroia*, and cannot find any satisfactory limit from *Gnophæla* alone. The group is rather tropical than temperate, *Gnophæla* being from the southwest and west, and *Melanchroia* still more typically southern—Key West, Mexico, Texas, Arizona. I place the two genera at the head of the series, on account of their *Lithosiid* tendencies.

## GENUS GNOPHÆLA, Wlk.

1854—Wlk., C. B. Mus. Lep. Het., II., 331.

1872—Stretch., Zyg. & Bomb., 35.

*Omoiala*, Grote.

1863—Grt., Proc. Ent. Soc., Phil., II., 334.

*Lamprosina*, Grote.

1863—Grt., Proc. Ent. Soc., Phil., II., pl. 6, f. 1.

*Callalucia*, Grote.

1866—Grt., Proc. Ent. Soc., Phil., IV., 315.

The ocelli are present, the eyes small, round and prominent, and the head as a whole, small. Tongue rather long and strong, palpi slender, drooping, with loose thin vestiture. Antennæ elongate, in the male heavily and lengthily bipectinated. Legs, subequal, smoothly scaled, the usual spurs small. Primaries with 11 veins, one of the series from the end of the sub-costal wanting, 3, 4 and 5 are from the median at the end of the cell, 5 rather close to 4, cell closed by a curved vein: 6 from the end of the subcostal on a very short stalk with 9, which runs to the apex and gives off one vein about half way to tip. Vein 10 is from the sub-costal before the end of the cell. Secondaries with 3 and 4 on a stalk from the end of the cell; 5 from a short spur cross vein, not far from the

stalk originating 3 and 4 ; a curved continuation of the cross vein closes the cell ; 6 and 7 on a long stalk out of the end of the subcostal, the stalk forking about half way to the margin ; 8 out of the subcostal about one-third from base.

The above notes are from a male, *G. hopfferi*. The exact relation of the very variable forms of the species is not at all settled, and there may be more or fewer species than are now recognized.

*G. hopfferi*, Grt. & Rob.

1867—G. & R., Tr. Am. Ent. Soc., I., 332, *Gnophala*.

1872—Stretch,\* Zyg. & Bomb., 38, 236. pl. 2, f. 2, *Gnophala*.

1881—Butler, Papilio, I., 129, *Gnophala*.

1882—Stretch,\* Papilio, II., 82, *Gnophala*.

var. *discreta*, Stretch.

1876—Stretch, Lep. Wheelers Exp., V., 802, *Gnophala*.

*arizone*, French.

1884—French, Papilio, IV., 2c, *Gnophala*.

1884—French, Papilio, IV., 112, = *discreta*.

Stretch gives the food plant as *Myosotis*. The insect has been taken in California, Arizona and Oregon (May 7 to June 1).

*G. latipennis*, Bdv.

1852—Bdv., Lep. Cal., Ann. Soc. Ent. Fr., 2nd ser., v. X., 320, *Glaucoptis*.

1862—Morris, Synopsis Lep., 136, *Glaucoptis*.

1872—Stretch, Zyg. & Bomb., 38, = *hopfferi*.

1882—Grote, New List 14, on sp. dist.

Habitat—California.

It is highly probable that Mr. Stretch is correct in referring *hopfferi* to this species ; but as Mr. Grote still lists them as distinct, and I have not studied the forms myself, I follow Mr. Grote for the present.

*G. vermiculata*, Grote.

1863—Grt., Proc. Ent. Soc., Phil., II., 334, pl. 6, f. 1, *Omoiala*.

1865—Grt., Proc. Ent. Soc., Phil., IV., 316, *Callalucia*.

1867—G. & R., Tr. Am. Ent. Soc., I., 332, *Gnophala*.

\* This sign, whenever used with a reference, as above, indicates that the early stages were referred to.

1872—Stretch, Zyg. & Bomb., 36, pl. 2, f. 1, *Gnophæla*.

1881—Butler, Papilio, I., 130, *Gnophæla*.

1888—Bruce,\* Ent. Amer., IV., 24, *Gnophæla*.

var. *continua* Hy. Edw.

1881—Edw., Papilio, I., 80, *Gnophæla*.

Habitat, Colorado.

Mr. Bruce gives the food plant as *Mertensia virginica*, and the date in the Upper Platte Canon as July. The probabilities are that the species is double brooded, the first brood appearing in May, the larva of the second in July, imago late in July and early August.

#### Genus MELANCHROIA, Hübner.

1816—Hübner, Verzeichniss, 173.

1854—Walker, C. B. Mus. Lep. Het., II., 386.

1862—Clemens in App. to Morris Syn., 297.

This genus I have made no study of, although there is considerable material in the National Museum available for that purpose. Mr. Grote never included the genus in his lists and apparently considered it extra territorial. It is only within quite recent years that it has been placed by Mr. Edwards among the genera of our fauna, though Mr. Stretch recorded it in 1876 as found in Arizona. It is really a stranger to the rest of our fauna—an intruder from Central America—but it seems necessary to include it.

The bibliographical references to the older authors are all at second-hand, as, at the time I was studying their works and making notes, the species were not recognized as belonging with us. This is, perhaps, a good place to mention that, except where otherwise stated, all the references have been verified, and, barring errors in transcription and type, are correct.

#### *M. cephise*, Cramer.

1782—Cram., Pap. Ex., IV., 182, pl. 381, f. E., *Phalæna*.

1816 (?)—Hübner, Samml. Ex. Schm., II., Sping, 17, ff. 1-4.

1816—Hübner, Verzeichniss, 173, *Melanchroia*.

1854—Wlk., C. B. Mus. Lep. Het., II., 387, *Melanchroia*.

1862—Clem., App. to Morris Syn., 298, *Melanchroia*.

1886—Edw., Ent. Amer., II., 9, *Melanchroia*.

Habitat—Texas, Arizona, Mexico, West Indies.

*M. geometroides*, Walker.1854—Walk., C. B. Mus. Lep. Het., II., 357, *Melanchroia*.1886—Edw., Ent. Amer., II., 9, *Melanchroia*.

Habitat—Key West, Fla., West Indies.

There are quite a number of specimens of what I take to be this species, in the National Museum, from the Morrison collection, but they have not been as yet incorporated into the systematic series.

*M. inconstans*, Geyer.1837—Hüb., Zutræge, No. 431, ff. 861-862, *Melanchroia*.1854—Wlk., C. B. Mus. Lep. Het., II., 389, (?) *Melanchroia*.1860—Clem., App. to Morris. Syn., 298, *Melanchroia*.1876—Stretch., Rept. Lep. Wheeler Exp., V., 802, *Melanchroia*.*secreta*, Wlk., Cat. Lep. B. M., 222, supp., *Ardonia*.

1876—Stretch, Rept. Lep. Wheeler Exp., V., 802, pr. syn.

Habitat—Mexico, Arizona.

The synonymy is from Stretch, as are the bibliographical references to Walker.

Genus *DARITIS*, Walker.

This is also a recent addition to our fauna, made by Mr. Edwards. The Mexican form is not uncommon in its home, but the variety described by Mr. Edwards seems rare; at all events there have been very few specimens brought in. I have made no notes on this genus.

*D. thetis*, Klug.1836—Klug., Neue Schmett., IV., f. 1 and 2, *Euprepia*.1886—Edw., Ent. Amer., II., 165, *Daritis*.var. *howardi*, Edw.1886—Edw., Ent. Amer., II., 165, *Daritis*.

Habitat—New Mexico, southward.

I have given none of the bibliography for the original species, as Mr. Edwards's description covers both species and variety.

From this point the order observed in Mr. Grote's list of 1882 is followed, not from any conviction that it is the best arrangement, but because it is easiest, and because for the present purpose any order will answer equally well.

(To be continued.)



## OBSERVATIONS ON SOME NORTHERN DERBIDÆ.

BY E. P. VAN DUZEE, BUFFALO, N. Y.

*(Continued from page 159.)*

*Otiocerus Wolfii*, Kirby. A pale specimen of this frail little form was beaten by me from a beech tree September 3, 1888, at Lancaster, N. Y., and Mr. Uhler has kindly sent me a fully colored individual, presumably from Md., taken on the 6th of August. The antennæ in this species are very short, with a single appendage.

*Otiocerus Signoreti*, Fitch. I am indebted to Mr. W. J. Palmer, jr., for an example of this species, captured at Lancaster, September 14, 1888. It agrees with *Wolfii* in having but one appendage to the rather small antennæ. The white wings are faintly tinted with red and beautifully veined with the same color.

*Amalopota*, new genus.\*

Form very slight. Head rather short, horizontal above, almost vertical before, with superior and frontal keels about as in *Anotia*; apex obtuse. Eyes of medium size, emarginate below. Ocelli two, distinct, placed below and very near the inferior angles of the eyes. Antennæ about as long as the head, situated at the base of the clypeus in a socket formed by a sharp, slightly elevated ring; basal joint very short and annular; second joint diverse in the two sexes; in the male, much flattened, with the sides almost parallel; in the female, shorter and slightly flattened; in both sexes papillated, with a subterminal emargination, from which springs a bristle. Clypeus triangularly ovate, convex. Rostrum long, reaching to about the middle of the venter; terminal joint very short. Prothorax linear above, produced in an acute angle between the eyes; on the sides, suddenly expanded to a broad, thin scale. Humeral scales large and prominent. Legs slender, unarmed, of medium length; the posterior femoræ somewhat thickened; posterior tarsi three jointed; basal joint longer than the second and third united. Elytra long and narrow, widest at the inner apical angle; apex broadly rounded, a little retreating posteriorly; the costal area expanded near the base into a broadly rounded, slightly recurved lobe; a slight constriction of the costa just before the apex, with a thickening of the veins there, produces the appearance of an imperfect stigma. Venation simple, † almost as in

\* From:—*αμαλος* feeble, and *ποτη* flight.

† For convenience of comparison I have used Mr. Westwood's nomenclature of the venation.

*Anotia* ; costal area rather broad ; mediastinal vein forked at the basal third ; costal branch sending about two veinlets to the costa in the stig-matal region, and united by a cross vein to the outer fork of the inner branch, which is straight and twice forked just before the apex. Post-costal vein joining the mediastinal near the base and running straight to the apex of the elytra, parallel to the inner branch of the mediastinal vein ; the long, straight cell thus formed is crossed by two veinlets, one at the apical third, the other near the apex. A cross vein joins the post-costal with the median vein near the middle of the elytra, beyond which the former sends five branches to the inner apical margin, the basal two of which are themselves forked near their apex, and united by a zigzag submarginal vein that reaches the claval suture ; at this submarginal vein terminate the anal and the two branches of the median vein. The apical forks of the post-costal vein are united by slender cross veins, which with this submarginal vein form a series of about twelve apical and marginal areoles from the semi-stigma to the clavus. Wing :—Mediastinal vein simple, near the costa, which it touches at about the middle ; post-costal vein bifid before the apex, and united by a cross vein to the mediastinal and median veins, the latter of which is also bifid. Abdomen short and broad, with a dorsal carina ; showing five segments above and four beneath.

The vertex and front are so compressed into the superior and frontal keels that they might not improperly be described as wanting. These keels, as in *Anotia*, are united on the front and divergent posteriorly on the vertex, the included space being cut out to receive the pronotum. The mesonotum is convex and lozenge-shaped, the length scarcely greater than the width, which greatly exceeds that of the head ; with three dorsal carinæ. Four anterior coxæ long and slender, placed obliquely ; posterior short and thick. Base of the femoræ approximate. The genital pieces scarcely differ from those of *Otiocerus*.

This genus differs from *Anotia*, to which it is perhaps most nearly related, by the presence of ocelli, the greater length of the rostrum, the smaller number of veins in the stig-matal region, etc. ; from *Patara* by the presence of ocelli, the greater length of the rostrum, the shape of the head and thorax, and the venation ; from *Mysidia* and *Derbe* (Westw.), it differs in the single frontal carina, in the shape and venation of the wings and the form of the eyes, but agrees with the latter genus in the

presence of the costal constriction (although less pronounced), and the length of the rostrum. The only genus described by Stal to which it need be compared is *Hulcita*, from which it is sufficiently differentiated by the presence of ocelli, the form of the vertex, antennæ, etc.

*Amalapotia Uhleri* n. sp. Pale sanguineous. Elytra transparent, with the basal third and a broad band before the apex fuscous, the latter marked with sanguineous toward the costa. Whole insect, when fresh, covered with a white bloom, most conspicuous on the face and abdomen. Length—To tip of abdomen 3 m.m., to tip of elytra 8 m.m.; expanse of wing 15 m.m. Head—Keels of the front and vertex, viewed from the side, gently and regularly arcuated; vertex narrow, almost entirely cut out between the keels to receive the pronotum, which extends forward nearly to the middle of the eyes; extension of the frontal keels before the eye a little less than the width of the eye in the female, about half the width of the eye in the male. Rostrum extending to the third ventral segment, the last joint scarcely longer than wide. Antennæ of the female reaching to the tip of the head; second joint somewhat compressed, a little widened at the apex, which is obliquely and concavely truncated for the reception of the seta; in the male this second joint is a little longer and wider than in the female, and is much compressed, with the margins slightly thickened and the surface more distinctly papillated; a minute notch, almost at the end, bears a bristle a little longer than the width of the joint. In fresh examples, the *Ocelli* are liable to be obscured by the white bloom on the cheeks.

Thorax—Prothorax widened to an almost quadrangular scale behind the eye; central carina of the mesonotum inconspicuous; lateral carinæ almost obsolete. Elytra, when closed, extending about two-thirds of their length beyond the abdomen; basal lobe-like tooth minutely denticulate on its edge.

General color sanguineous. Head, thorax and antennæ fulvous, the latter suffused with pale sanguineous within the margin in the male; this color also invades the frontal keel, especially in the female. Keels of the vertex crested with white. Eyes dark brown. Clypeus pale fulvous. Rostrum white, tip black. Legs clear whitish, the posterior femoræ more or less invaded with sanguineous. Coxæ fading and white toward their tips. Abdomen in the male sanguineous, the basal ventral segments paler; in the female deep sanguineous, or even brownish-purple, darker

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along the crest ; posterior edge of the ventral segments and genital pieces pale, the valves above fulvous.

Elytra transparent ; basal third smoky-brown, omitting the humerus and costal region ; a broad brown band occupies the apical third of the costa, and narrows to about one-half this width at the internal apical angle ; this band includes a clear spot on its costal base, and omits about six of the apical areoles. In the female, this costal, clear spot is much larger than in the male, and coalesces with the clear, apical areoles. The veins are sanguineous within the limits of the brown, apical band, and in the stigmatal region are broadly bordered with the same color ; this color also appears in the veins of the basal brown patch in deeply colored examples. Wings clear, with a smoky tip, and a larger, slightly suffused, area at the base.

Described from five individuals—a pair taken *in coitu* Sept. 3rd, 1888, two females taken the same day, and another female taken by W. J. Palmer, Jr., of this city, a week later, all at Lancaster, N. Y. Three of these were beaten from maples, and two from uncertain trees—probably maple or beech.

I take pleasure in dedicating this beautiful little species to our leading American Hemipterist, Mr. P. R. Uhler, whose disinterested and unflinching kindness has been an inspiration and help to me in my studies of these insects.

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## CORRESPONDENCE.

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### GRAPTA J-ALBUM.

*Dear Sir :* Having heard that the larvæ and food-plant of *Grapta j-album* were unknown, I thought that I should do well in informing you, since you could best make known my little discovery, that I have bred the butterfly from young larvæ, which fed on silver birch (*Betula papyrifera*). Not knowing what they were, I neglected to make a long or careful description of them ; nevertheless, I hope the following observations may be of some value :—The larvæ were black, with two dorsai, two sub-dorsal and two super-stigmatal rows of white spots and smudges, three or four on each segment,\* with one dorsal and two sub-dorsal rows of shining black, branching spines ; two super-stigmatal rows tipped with red, and two sub-

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\* There were also other smaller white spots scattered over the body.

stigmatal rows pale red. Underneath yellowish-green, and in some places reddish, speckled with white; 12th segment reddish, both above and below; head black, and covered with many hard, white, conical tubercles, or short spines; somewhat cordate, with two thick, black, branching spines at the upper corners like horns. The chrysalids were about one inch long, pale green or light brown, sometimes with a reddish tinge, with two sub-dorsal rows of tubercles, eight in each row, the first six of these being bright, shining silver (in some lights gold) in colour. Like the other *Grapta* chrysalids, they were suspended by a button of silk at the tail. Before the imagos appeared, the colour and venation of the wings could be seen through the transparent outer covering. I found them on the 26th of May, 1889, when they were about eight inches long. On the 9th of June, they were two inches long. They moulted three times, and their appearance remained almost unaltered. They hung themselves up on the 13th of June, being then about 2.25 inches long, and on the 14th transformed. The imagos appeared on the 29th and 30th of June. I had altogether eight of these larvæ. The following is a description of a variety of the same larvæ taken at a later date:—On the 16th of June, I found the larva feeding, like the former batch, on the silver birch. Length about one inch. On the 17th it moulted, after which it was 1.5 inches long; colour purplish white and amber, with a dorsal band of white clouds, and some on the sides; white underneath; one dorsal, two sub-dorsal, two super and two sub-stigmatal rows of branching spines on segments 4 to 11, 2 to 11, 2 to 12 and 2 to 11 respectively. These spines were supported by tubercles, and the dorsal, sub-dorsal and super stigmatal were black, except the last two super-stigmatal; the rest were yellow and white. Head somewhat cordate and pale white, with two black branching spines at the upper corners like horns, and covered with small conical tubercles; upper corners black, and a dark mark like an inverted V over the jaws. On the 23rd it moulted again, after which it was light green, with two dorsal bands, more or less distinctly separated, of white clouds, and some white lateral markings; spines black, except the super-stigmatal, which were brown and amber, and the sub-stigmatal, which were pale green and white; the spine tubercles were orange yellow; head white, and covered with small, white, conical spines; spiracles black. It was largest at the 7th segment, segment 1 being very small; length about 1.75 inch. The chrysalis (June 29th) was green, with a rosy tinge and rosy markings, and with two dorsal rows of tubercles, 16 in number, the first six being shining silver in colour; about one inch long, with a large dorsal lump and two smaller lateral ones, and two at the head; black markings on last segment. On the 9th of July the imago appeared. Note that in this, and in the former description, the head is *not* counted as the first segment.

PERCY M. DAWSON, Montreal.

Mailed September 6th.