

## FURTHER NOTES ON ALBERTA LEPIDOPTERA.

BY F. H. WOLLEY DOD, MIDNAPORE, ALTA.

(Continued from page 134.)

378. *Parastichtis discivaria* Walk.—This species is correctly named, and Sir George Hampson changed his opinion as to the distinctness of *gentilis* before publishing. Walker's type is from St. Martin's Falls, Hudson's Bay Territory, and is the strongly marked contrasting form, with pale luteous inner and postmedial areas. Type *perbellis*, from Evans Centre, N.Y., which Hampson makes "ab. 1." is similarly strongly marked, but more even in shade, and lacks the contrastingly pale areas. This is the form figured by Holland. *Gentilis*, from the same locality, is even reddish brown, with indistinct maculation. All three forms occur here, and intergrade.

381. *Homoglæa hircina* Morr.—This has been rather common in recent years. I have never seen it in the fall, but it appeared in some numbers in the end of March, 1910, which I thought unusually early. This year however a few were seen at light during a mild spell on the 4th or 5th of March. A fortnight later the thermometer fell to about 15° below zero. It is a strikingly variable species, some of the forms being very pretty. The colour varies from a rather pale reddish luteous to dark chocolate brown. A handsome grey irroration is variably present or absent. Some are practically immaculate; others have the usual geminate cross lines of darker shades filled in with the ground colour, or with grey, the spots also sometimes outlined with grey. Sometimes most of the veins are grey lined. A rare form has black punctiform spots in the s.t., and still more rarely in the t.p. line also. A well defined median transverse shade sometimes exists, and generally runs through the middle of the reniform.

383. *Ipimorpha pleonectusa* Grt.—The type in the British Museum is a male from Evans Centre, N. Y. according to the Catalogue, and the eastern form seems to have reddish brown tints not possessed by specimens from Manitoba and Alberta, which Hampson makes "Ab. 1. Paler, and less red." Dr. Dyar, in the Kootenai List, says that both forms occur at Kaslo, and calls the light clay-coloured one "var. *aquilinea* Smith." Smith refers to

this as a mere synonym in his Catalogue, but I have seen neither type nor description.

384. *Dasypoudæa meadii* Grt.—High River (Baird).

385. *Copablepharon* sp.—This is not *absidum*, nor apparently any described species. I have seen a few other specimens besides the two previously referred to, but have only a single female in my collection, and do not care to describe from it. Mr. Baird has taken it at High River, and I have also seen a female taken by Mr. C. Garrett in Calgary on Aug. 1st, 1907. The primaries are very pale green, with slight fuscous irroration, and secondaries white, fuscous clouded centrally.

388. *Melaphorphyria oregonica* Hy. Edw.—*Oregona* of our lists is apparently a mis-spelling, as was also my previous rendering (Dr. Dyar's) of the generic name.

389. *Melicleptria septentrionalis* Hy. Edw.—Hampson makes this synonymous with European *ononis* Schiff. The type of *septentrionalis* is a male in the Neumægen collection at Brooklyn, and is labelled "N.W.B.C."

390. *Heliaca nexilis* Morr.—Rather common at timber line in the mountains. My records are: Brobokton Creek, Wilcox Pass, and Sheep Mountain, July 10th to 22nd (Mrs. Nicholl); Mt. St. Piran, near Agnes Lake, Laggan, 72-75,000 feet, July 17th and 18th. This is the *nexilis* of the British Museum, Rutgers College, and Washington collections.

Var. *elaborata* Hy. Edw.—One male, Head of Pine Creek, June 9th, 1897. High River, June 10th, 1909, two ♀s (Baird). I have seen other specimens taken by Mr. Baird. This form is the *diminutiva* of my former notes on Smith's authority. The error was excusable, as the two are not unlike. But *diminutiva* has truncate frontal prominence, which this has not, and differs in colour and maculation as well. Holland's figure under *diminutiva* appears to be *Melicleptria persimilis* Grote, a species with rounded frontal prominence and spined tibiæ. Superficially *persimilis* happens to bear a much closer resemblance to *elaborata* than to *diminutiva*, but has an additional white spot near base of secondaries.

One of my *elaborata* I have compared with the type, a Colorado female in the Henry Edwards collection. The main features in which it differs from what I take to be the true *nexilis* is that the head, thorax and primaries are strongly overlaid with yellowish, giving the impression, against the black ground, almost of bronzy green. In my three specimens, in addition to the yellowish or whitish band on primaries, there is a small yellowish mark in the cell before the orbicular. There is a trace of this in one only out of my ten mountain *nexilis*, and I notice it exists in Hampson's wood-cut of *nexilis*. After describing *nexilis*, Sir George Hampson gives "Ab. 1. *elaborata*, fore wing without the white spot in cell before the reniform." This is not in accordance with my notes on the type in the New York Museum, but I may possibly have overlooked this difference, which my specimens do not have. Several of my mountain *nexilis* lack this spot. In the British Museum collection an *elaborata* label is placed beside a Washington Forest Reserve specimen, which I should have called typical *nexilis*.

For a long time I was inclined to consider *elaborata* distinct, as I found it hard to believe that a species should occur here on the plains, and in the mountains, in so far as I had observed, at the timber line only. All the B.C. records I can find appear to be from mountains, elevation not given. So closely does *elaborata* resemble *persimilis* that I suspected the existence of tibial spines in the former. But I recently removed, bleached and mounted all the legs of my whole series of *nexilis* and *elaborata* without succeeding in finding a single spine on any tibia. I must admit that the differences between these two latter, such as they are, are very slight, and the observed variation suggests that with more material the forms may be found to overlap. What has made the matter still more interesting is that Mr. A. F. Winn and others have recently discovered *nexilis* at St. Hilaire, which is close to sea level in Quebec. I am indebted to Mr. Winn for a specimen, and except that it has rather less pink on secondaries beneath, it is practically a dead mate for one of my Mt. St. Piran timber line specimens. In Quebec, Mr. Winn says that the species flies in the middle of May. That is two months earlier than the mountain dates, but is probably easily explained by the altitude.

391. *Polychrisia trabea* Smith.—During 1910 I took this species in some numbers at flowers of wild larkspur, on which the larva in all probability feeds.

392. *P. purpurigera* Walk.—Edmonton, July 14th, 1910 (F. G. Carr.)

395. *Euchalcia putnami* Grote.—The type is a female in the British Museum. There I found North American and European specimens associated as one species under the name *festuæ* Linn, and my notes say that the reference is apparently justified, as the European species varies to *putnami*. As a rule, the European form is darker and richer in colour and has a golden metallic spot at the base of the costa which *putnami* generally lacks. Another character not usually found in *putnami* is a metallic outer edging to the t.a. line below the median vein. In *putnami* the two central metallic spots are sometimes joined. I am not sure whether this is ever the case with *festuæ*. At any rate, such variation is rare in Europe. Vancouver Island specimens vary very much nearer to typical *festuæ* than do my local series. Some have the rich dark coloration, the metallic marks at base, and on the t.a. line; but the inner one of the two central spots less frequently extends a little above the median vein than it does in Alberta specimens, or than appears to be the case in *festuæ*.

398. *Autographa californica* Speyer.—The most important distinctive mark between this species and *pseudogamma* I had overlooked in my previous paper. *Californica* has a fine black longitudinal streak anterior to the subterminal line near the apex, which usually reaches, or very nearly reaches, the t.p. line. In *pseudogamma* this streak is non-existent. It exists in *ou*, which resembles *californica* rather closely in pattern, though unquestionably distinct. As *ou* has quite recently been added to the Canadian list, on the strength of a specimen taken at Aweme by Mr. Criddle, a comparison with *californica* may be of special interest. In *californica* the t.p. line is somewhat deeply sinuate near the inner margin. If viewed with the outer margin of the wing upwards, that portion of the line below vein 2 has the shape of a written "n" with the top of the first stroke rather pointed. In *ou* this portion of the line is very slightly waved only. In *californica* the sign is usually

of the well-known Greek "gamma" form, but is sometimes formed of two separate marks. The inner one is roughly V-shaped, with the strokes out-curved. The outer mark is a lobe-shaped dot, which joins or tends to join the V at its apex—that is, at the point nearest the inner margin of the wing. In *ou* the inner mark is more U-shaped, and the outer spot is approximate to, and sometimes joins, it at a point nearest the outer margin. There are other differences in colour and maculation, but these are the most obvious. The difference in the sign is well shown in Ottolengui's figures. As a matter of fact, I find the signs in many *Autographas* much more variable than I had been led to suppose from first perusals of Ottolengui's paper. The most obvious structural differences between these two species is that *ou* has hind tibiæ strongly spined, whilst *californica* has not.

Holland has his figures of the above three species badly mixed. On plate XXVIII., fig. 25, as *rogationis*, represents *ou*, whilst fig. 33, called *ou*, is of *pseudogamma*, and fig. 35, called *pseudogamma* is obviously *californica*.

The question as to the true status of closely allied forms separated by wide stretches of ocean will probably always give rise to controversy. The best way of dealing with the matter is probably to treat such forms as distinct, unless exactly similar specimens can be found on both continents. I am not aware that similar specimens have been found of our *californica* and European *gamma*, and therefore prefer to treat them as distinct. One difference in pattern appears to be that the upper portion of the t.p. line is more crenate in *californica*. All the maculation in our species is more clearly written, and shows greater contrasts. *Gamma* has the black streaks near the apex, but it is less developed than in *californica*. The sign is about similar in the two, and both have unarmed tibiæ. But in general color of primaries *gamma* is darker and more even, and much more like normally coloured *ou*.

Grote in CAN. ENT. XXXV., p. 238, Aug. 1903, states that *ou* and *fratella* are distinct species, and that any confusion between them arose from misidentification of *ou*. In his 1905 list he places *californica* and *russea* as varieties of *ou*. The type of *russea* from

Colorado is in the Henry Edwards collection, and is a reddish *californica*. That of *fratella*, as well as *ou*, is in the British Museum, and I was satisfied that they were one species. *Fratella* is undersized. The type of *ou* had either no hind legs or they were so tucked up in the vestiture that I had no chance of finding spines.

401. *A. rubidus* Ottol.—I have six more local captures of this species in my collection, dated June 1st to July 5th, 1909 and 1910. It comes to light and treacle, and I have taken it on the wing after dark flying over vetches. I took six specimens during 1909 alone, five of them at treacle. The tail of the sign is not always produced to a point as in Ottolengui's figure of the type. It sometimes widens out into a slight lobe, rather like that of *californica*. On the other hand, I have *californica* in which the tail is much like that of the type of *rubidus*. The nearest well-known relation to *rubidus* is *precaionis*.

402. *A. alias* Ottol.—I have only four Alberta specimens in my collection which I feel quite certain are this species. The Waghorn (Blackfalds) specimen previously referred to, a ♀ with ♂ abdomen attached, July 25th, 1902. A ♂ and two ♀s, Head of Pine Creek, Aug. 7th, 9th and 16th, 1897 and 1903. They agree with Ottolengui's figures, and have the sign nearer to that of *rectangula* than any other species, but not as heavy. In fact, *alias* is the nearest ally that *rectangula* has. Also taken at Banff, Aug. 4th, 1908 (Sanson).

I long hesitated in separating from this a form which I have been calling *octoscripta*. I have a local female, dated Aug. 21st, 1903, and another from Mr. Wallis, Winnipeg Beach, Man., Aug. 23rd, 1910. The latter specimen is almost the exact counterpart of Ottolengui's figures. Mr. Wallis showed me another female taken at the same place, Aug. 22nd. I have also given this name to a Banff male, one of Mr. Sanson's captures, August 1910. This has a more spider-like sign than any of the others. I have a male from Cowichan Bay, near Duncans, Vancouver Island, which is brighter coloured and has heavier sign, but which I think is the same. It resembles *alias* very closely in colour and general pattern, but is

rather darker. It has the irregular dentate terminal line of that species and *rectangula*, and the short blackish streak between that and the s.t. line opposite the reniform, of which there sometimes seems to be a trace in the other two species. The sign seems to be a modification of that in *alias*, which fact for long caused me to associate the two. As Grote describes it, it is "incompletely 8-shaped, open superiorly." The outer portion of the 8, however, seems sometimes to be a solid dot. The inner portion opens wide like that in *alias*, but is more thread-like. Other differences perhaps distinctive, appear to be that the t.a. and t.p. lines are more direct and less distinct. The t.p. line is, as Grote puts it, "waved or trembled, and appearing thus a distinguishing feature from Guenée's species" (*mortuorum*, *rectangula*). In *rectangula* and *alias* this line is scarcely crenate, but rather obviously waved. In *octoscripta* it is minutely but distinctly crenate, and but very slightly waved. I have carefully studied Grote's description, and the series standing under the name in the British Museum, and must for the present consider this Western form as dark and heavily marked *octoscripta*.

The British Museum series consists of six specimens—all very much alike, and looking somewhat bleached. There are two poor males, Nova Scotia (Redman), one of them badly rubbed. A pair, Grote collection, the male "Can." (This specimen was still unset when I saw it.) Two males, Hudson's Bay. The Grote collection females have two blue-bordered labels in Grote's handwriting—both "*Plusia 8-scripta* Sanb.," the upper label with "M.S." after the name. Whether this is really the type or not I cannot say. They are smaller than mine, as well as paler, and have the sign very thread-like, and similar in the whole series.

The description was published only by Grote, and the name should therefore be credited to him, though he used Sanbourne's Mss. name. The type specimens, number not stated, came from "Anticosti Island (Couper); Racine (O. Meske); Mass. (Prof. Packard)."

(To be continued.)