GEOMETRID NOTES.

ON THE GENUS XANTHORHÖE.

BY L. W. SWETT, LEXINGTON, MASS.

Xanthorhœe pontiaria and *forsaria* Taylor have been so often misidentified in collections, that I have tried to straighten them out in this paper. About three years ago Mr. E. H. Blackmore, of Victoria, B. C., collected a long series of all the forms and sent them to me to work up. Through the kindness of Drs. Barnes and McDunnough I was supplied with types and paratypes of both species, so that I did not have to rely on descriptions.

Xanthorhœe pontiaria was described by the Rev. G. W. Taylor in the Canadian Entomologist, vol. XXXVIII, p. 400, Dec. 1906, from four specimens, the type being a female from Wellington, B.C., May 23, 1905. There were two other females agreeing with the type, and from the same locality, but the male from Salem, Oregon, June 2, 1904, on a closer examination, proved to be distinct and a good species. The typical *pontiaria* Taylor is whitish fuscous in colour and resembles slightly the European *fluctuata*, but is much larger. The central band of the primaries is usually brownish, with a whitish centre, in the type form. The anal tuft of hairs of *pontiaria* is bushy and reddish-shaded, and seems broader than in any of the other species. The head is reddish-tinged in front, and the antennæ appear to have longer pectinations than the other species. There is a form of *pontiaria* in which the central band is solid reddish brown, but this is not so common as the white-centred variation. The male type of *pontiaria*, as I have said before, is not conspecific with the female; and as the female was designated as the type, I propose to describe the male as follows:

***Xanthorhœe macdunnoughi*, sp. nov.**

Antennæ rather narrowly pectinate, palpi short; front of head gray, as is thorax and abdomen. The primaries are dark ashen gray, with a broad, irregular fuscous band centrally. Basally there are several indeterminate hair-lines, rounded outwardly below the costa. Just before the intradiscal line there is pale band crossed by a geminate, brown hair-line, following the same course as the intradiscal line. The intradiscal line is geminate, bent.

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sharply outwardly below costa, then running in scollops on the veins to inner margin. Beyond the intradiscal line is a brown hair-line scolloped outwardly on the veins and bordering the pale, central portion of the median band. Just before the extradiscal, is another hair-line, following the same course and scolloped on the veins. The central part of the band is lighter with a small, black discal spot. The two central hair-lines have a tendency to form confluent circles in the median band of the primaries. The extradiscal line is geminate, composed of two hair-lines bent outwardly below the costa, forming a projection, then making an inward and outward curve to form a second projection. From the second projection it curves slightly backward, then runs straight to inner margin. The pale space beyond the extradiscal line is crossed through the centre by a scolloped hair-line. A submarginal brown scolloped line, the scollops running inwardly on the veins. The margin is fuscous traversed by a white, subterminal scolloped line. The fringe is short, fuscous, with small, geminate, black dots at the base. Secondaries pale gray with six or seven indeterminate, brown, wavy, hair-lines crossing them. The basal line runs just outside of the discal spot, curving upwards slightly as it leaves inner margin. The next two lines follow the same course as the extradiscal, and beyond this is a pale band, with a hair-line running through the middle. Margin of wing fuscous with a white, scolloped, subterminal line. Beneath the primaries are smoky ashen, with the lines above showing faintly through. Secondaries marked the same as above, only the lines are, in most cases, accentuated as dots on the veins.

This is a rather rare species, and not so ashen in colour as *pontiaria*, being more of a gray fuscous colour. I take pleasure in naming this species after Dr. McDunnough, who has given us many valuable papers in the "Contributions," despite several adverse criticisms which have recently appeared.

Expanse 25-30 mm.

Holotype.—♂, May 30, 1915, Victoria, B.C., from E.H. Blackmore, in my collection.

Allotype.—♀, May 14, 1913, Victoria, B.C., from E. H. Blackmore, in his collection.

Paratypes.—3 ♂s and 2 ♀s from Victoria and Duncans, B. C., in my collection; 4 ♂s, 7 ♀s, June 7 to July 3, from Victoria and Goldstream, B.C., in the collection of Mr. Blackmore. One ♂ Salem, Oregon, June 2, 1904, with other ♂s and ♀s from British Columbia in the Barnes' collection.

Xanthorhœ macdunnoughi can be easily separated from *pontiaria* Taylor by the general gray colour of the primaries, the gray head (that of the latter being reddish) and the narrower pectinated antennæ.

Xanthorhœ forsaria Taylor (Can. Ent., l. c., p. 401) has been a puzzle for a long time. It is evidently a species of high altitudes, as I have never seen any except from mountainous regions. The specimen from Laggan, Alberta, July 20, 1904, may not be the same as *forsaria*, as I have a ♀ from the same district which seems distinct. The type specimen taken in August is a yellowish ashen with a faint, reddish brown median band, the whole insect having a rubbed appearance. I have seen two other specimens taken on Mt. Cheam, B.C., by Mr. Bush through Mr. E. H. Blackmore, and they agree with Drs. Barnes' and McDunnough's specimens. The central band is narrow at the inner margin, and has the projections of the extradiscal line well rounded off. I have a form approaching *forsaria* Taylor very closely from Atlin, B.C., which I propose to describe as follows:

***Xanthorhœ atlinensis*, sp. nov.**

Head, thorax and abdomen fuscous; antennæ rather narrow as in *macdunnoughi*. Primaries smoky fuscous, rather diaphanous, crossed by seven or eight scalloped fuscous lines, with a faint, reddish brown median band. There is a basal brown patch, the outer edge of which runs out from costa toward median vein, then bends backward and goes to inner margin. There are three brown scalloped hair-lines between basal and intradiscal lines. The intradiscal line curves slightly outward till just below costa, then runs straight to inner margin, with a slight curve, being accentuated on the veins. There is a second hair-line running exactly like the intradiscal and almost touching it. The centre of the median band is lighter than the sides, and has a small, black spot. There is a hair-line just before the extradiscal which makes

quite a sharp projection below costa, then curves back and runs straight to inner margin. The extradiscal line goes straight across costa, the forms the usual sinus, the projections of which are rather more rounded than usual. Below the second projection the extradiscal line runs back, then goes straight to the inner margin, being rather narrow there. The median band has a reddish brown, somewhat washed-out appearance, as in *forsaria*, and is narrow at the inner margin. Beyond the extradiscal line is the usual pale band, with two scalloped hair-lines; and a fuscous outer margin, with subterminal, scalloped, white line. The fringe is short and fuscous, with the small, marginal dots rather contiguous. Secondaries pale smoky fuscous with six or seven indeterminate scalloped hair-lines, accentuated as dots on the veins. The extradiscal line runs straight out from costa, making a rounded angle below the small, black, discal joint. There is a pale band which is crossed by a scalloped line, then a heavy scalloped submarginal line, followed by a fuscous marginal border with the usual subterminal, scalloped, white hair-line.

Beneath the primaries are as above with the lines faintly showing through, but the basal portion is darker than the outer portion. Secondaries as above, but are darker basally.

This species is closer to *forsaria* Taylor than any other, but differs in the smoky diaphanous colour where the former has a yellow or ochreous tinge. It also differs in the time of appearance. These species all have the lines and bands running about the same, and it is very difficult to draw any one character as constant.

Expanse 30 mm.

Holotype.—♂, June 26, 1914, Atlin, B.C., from Mr. E. H. Blackmore, in my collection.

Paratypes.—One ♂, June 28, 1914, from Mr. Blackmore, in my collection, and 6 ♂'s, June 28, 1914, in coll. Blackmore and the Provincial Museum, Victoria, B.C. There is still another species occurring in the vicinity of Victoria, B.C., which emerges early in the season and resembles superficially *pontiaria* but is more fuscous, and the central band is solid blackish with a tendency to fade below median vein, as in *forsaria* and *atlinensis*. This species was taken along with the others by Mr. Blackmore, and

as it is through his efforts that I have been able to prepare this paper I propose to describe it as follows:

Xanthörhoe blackmorei, sp. nov.

Antennæ broad as in *pontiaria*, front of head with reddish tinge, thorax and abdomen fuscous ashen. The primaries are fuscous ashen, a basal brown band starts at an angle from the costa, turns back and goes straight to inner margin. There is a pale space crossed by three scalloped hair-lines beyond the brown basal patch. The intradiscal line starts at an angle below costa, then curves outwardly to inner margin. In the holotype, the intradiscal line curves outward from costa to inner margin and lacks the sharp bend downward on costa which occurs in some specimens. The median band is usually solid blackish with a wine-coloured tinge, and has a tendency to disappear below median vein. In some examples the centre of the median band is pale and there are the geminate intra- and extradiscal lines, as in the other species. The extradiscal line runs downward from costa about 3 mm. and then forms a small sinus, the second projection of which is about on a line with median vein. Below the median vein the extradiscal line makes two scallops inwards, then runs straight to inner margin, scalloped on the veins. There is the usual pale, extradiscal band and scalloped hair-lines with the marginal band beyond and subterminal, white scalloped line. The fringe is short with small, black dots on either side. The secondaries are fuscous ashen, with the usual lines, except that in some specimens the extradiscal line is strongly angled below the discal dot. Beneath the primaries and secondaries are marked as above but paler, except in the basal portions, where they are smoky.

Expanse 28–30 mm.

The early date of appearance, together with tendency of the extradiscal line to be angulate, and the blackish median band of primaries, help to separate this species from the others.

Holotype.—♂, May 2, 1915, Victoria, B.C., from E. H. Blackmore, in coll. Swett.

Allotype.—♀, May 19, 1915, Victoria, B.C., from E. H. Blackmore, in coll. Swett.

Paratypes.—♂s and ♀s, from Victoria and Goldstream, B.C., in colls. Blackmore, Barnes and Swett.

These closely allied species are best separated by the genitalia, as the markings run very close and they are rather variable.

Xanthorhõe pontiaria differs from the others in the shape of the costa of the valvæ, near the tip, which is somewhat sickle shaped and has heavy, tooth-like spines resembling a lobster claw. The sacculus is long and jointed, the saccus does not taper but is broad and rounded at base. The penis is stout with a spined, bulbous head, the spines being long and heavy. The calcar is not heavily haired.

Xanthorhõe macdunnoughi has a very short, chunky costa, with deep sinus near the tip, which is heavily armed with fine spines, extending around tip almost to the indentation on the sacculus. The sacculus is not elongated as in *pontiaria* and has the indentation opposite projection of costa above, and is very broad and somewhat angulate near the base. Penis stout with bulbous spined head; calcar with fine, short hairs. The saccus is not blunt but rather long and tapering. The shape of the saccus alone would separate these two species.

In *Xanthorhõe blackmorei* and the two species following, the costa of the valvæ is of a very different shape. About half way between the tip and base there arises a jointed projection like the horn of a rhinoceros, with the point directed just above base of uncus. On the outer side it slopes down forming a sinus, the extreme tip of costa being club shaped and with a few fine spines. The sacculus is elongated, rounded at tip, and has very slight indentation opposite base of projection. Near the base it forms quite a sharp angle. The calcar is longer haired than the former species and rather coarse. The saccus is broad and blunt like *pontiaria* at tip.

Xanthorhõe atlinensis shows a close relationship to *blackmorei* in the shape of the costa of the valvæ but differs as follows: The projecting horn is a little nearer base and just before it there arises a second little horn. The horn is more erect than in *blackmorei* and on the outer side slopes down, forming a gentle elongated sinus, the tip of it being just rounded, not swollen or club shaped. The sacculus is elongated and pointed at tip, and opposite the

horn has an oblong indentation, and the base lacks angulation. The saccus is broad but has a suddenly narrowed tip; the calcar has rather long hairs, but they are rather sparse. The penis is stout and bulbous with spines, and the cornuti of the vesica are three in number, long, moderate and short.

In *Xanthorhœe forsaria* the costa of the valvæ is shaped as in *atlinensis*, but the first horn is much longer, as is also the large one. On the outer side of the large horn is a slight point or rudimentary spine. The large horn is nearer tip of costa than in *atlinensis*, also it makes a very slight sinus, and the tip is quite narrow with many fine spines. The sacculus is elongate and pointed but broader than usual, and the base is very wide and rounded. The calcar has numerous fine, short hairs, and the saccus is broad with a stubby, rounded tip, not narrow as *atlinensis*. The penis does not seem quite so bulbous or so stout as usual, though it is decorated with the usual heavy spines. Probably all the species have the three cornuti on the vesica. My mount of *Xanthorhœe forsaria* was made from a ♂ paratype, which Dr. McDunnough kindly gave me. The shape of the costa of the valvæ and the sacculus, and the type of the saccus, seem to give better characters for separation than the penis in this group, though with more material the results might prove different. The above description is based entirely upon the male genitalia, as I had too few females to spare for slides. Possibly *atlinensis* may prove a northern race of *forsaria*, but I cannot tell without more material, and the sexual characters would seem to keep them apart.

PHENACOCOCCUS STACHYOS Ehr. (= *P. pettiti* Hollinger)

In the Canadian Entomologist for August, 1917, the writer described, as new, a mealy bug from Missouri. A short time after the description was published, G. F. Ferris called my attention to the apparent similarities that he thought existed between *Phenacoccus pettiti* Hollinger and a certain Californian species previously described by Ehrhorn as *P. stachyos*. A slide mount of the California species was submitted to the writer for comparison with his series of individuals of the Missouri species. Ferris states that the specimen he submitted to the writer is a topotype

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