

spot; sub-reniform entirely obsolete; basal dash continued by a distinct dark shade to near apex. Sprinkling of pale brown and bluish-gray scales more conspicuous than in preceding.

Variation *Decorata*.—Color as in preceding; reniform like *obsoleta*, but less distinct; sub-reniform large, pale and wide open, or rarely closed; powdering of bluish-gray and pale brown scales in interspaces conspicuous; dark shade behind reniform heavy.

Variation *Umbrosa*.—Primaries uniform brownish-gray with hardly traces of other colors. Markings all present but more or less indistinct.

Variation *Confusa*.—Paler brownish-gray; reniform with pale brown centre in a darker brown ring outlined with bluish-white; sub-reniform, pale and connected merely with top line. All markings in brown, t. p. line being darker than the rest, the bluish-gray scales sparsely distributed over whole wing. Secondaries *orange-red*.

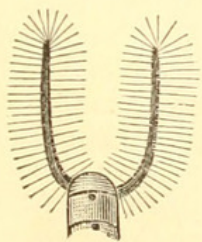
In a large number of examples of this very variable species I have found none that cannot be placed under one of the forms described, nor do the gradations between them seem finer than between *innubens* and *scintillans*.

No better illustration of the uncertainty of the position of the sub-reniform as a specific character can be found than in this species, where in one form a portion of the examples have this wide open, another portion closed, but connected with t. p. line, and still others with the spot entirely detached. In the species, as a whole, all gradations can be found, from no sub-reniform at all, to individuals with it large, pale and wide open.

The forms now described, by placing *obsoleta* at the head, and following with the others in the order named, form a very pretty series, and if *obsoleta*, *decorata*, *umbrosa* and *confusa* be selected, they would readily pass as distinct species; great variation is observable throughout in the indentation of the t. p. line, but not sufficiently to admit of further division, no ground for such division, either as a matter of convenience or otherwise being apparent, unless the position of the sub-reniform in *decorata* should justify dividing this one form into three. All of these variations appear to be strictly morphic, the species being single brooded, and there being no apparent limit of variations to localities.

ANAL APPENDAGES OF LEUCARCTIA ACRÆA.

BY R. H. STRETCH.



Not having, in my reading, seen any notice of certain very peculiar appendages to the abdomen of this common insect, it may be interesting to put on record some observations made a few evenings since. It may be that they are well known, but if not I will suggest that examination be made to see if the

Eastern examples differ in any way from our Californian ones in this respect.

While collecting round the suburban street lamps I thought I had found a moth with most peculiar antennæ, the moth being invisible at the time. A closer inspection showed the objects to be the anal appendages of a male *acræa*. To preserve them extended I attempted to kill it suddenly by crushing the thorax, but when I got it in my hand there was nothing visible but two tufts of black hair slowly disappearing under the penultimate (ventral) segment of the abdomen. By applying a gentle pressure from the base of the abdomen towards the tip I was fortunate enough to see them gradually protruded, presenting a most beautiful appearance, and by tying a thread tightly round the tip of the abdomen was able to retain them extended.

They each consist of a delicate membranous tube, gradually tapering to the tip, covered all over with the most delicate, evenly cut, silky black hairs, which stand erect when the organ is distended, presenting the appearance of a miniature copy of the small circular brushes used for cleaning lamp-chimneys. The hairs are nearly one-eighth of an inch long, and the total length of the organ fully half an inch.

They do not protrude in a direct line with the body, but project somewhat from the sides and then curve backwards parallel to each other about three-eighths of an inch apart, so that their shape is somewhat like a horseshoe, with the prongs directed backwards. The membranous tube is nearly white or pale yellow and when held against the light is apparently ringed somewhat like a tracheal tube.

They are evidently inflatable at will, but, apparently, are but seldom used. This is the first time they have come under my notice, although I have taken the insect abundantly for years, as all collectors must have done.

Since noticing them I have not taken a female, so that I cannot say whether they are confined to the male sex, but presume they are. They are present in the three males I have examined and, doubtless, may be classed under the head of sexual appendages. Will some Eastern collector look if anything like them occurs in the genus *Spilosoma*?

San Francisco, September 9, '82.

NOTES ON LEPIDOPTERA.

SAMIA COLUMBIA AND ITS PARASITE. In the May No. of "PAPILIO," 1882, appear some notes on the food plants of this species, in which its northern habitat is indicated. Since writing these notes I have received evidence of its occurrence in Manitoba, at a point 120 miles west of Winnipeg and 20 miles north of the C. P. R. and have now, in my possession a cocoon containing a living pupa collected at that point. No doubt the species is correctly named *Platysamia Columbia*—or perhaps more properly *Platysamia Cecropia* Var. *Columbia*. I have also found a parasite on this species which is believed



Thaxter, Roland. 1883. "Anal appendages of *Leucarctia acraea*." *Papilio* 3(2), 41–42.

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