

be given, and of every species studied. The entire structure should be known when we enter upon a re-organization of the genera of described species. In conclusion, I must generally agree with Lord Walsingham's remarks on the *Tineidæ*. So far as I have studied them, we appear to be able to classify our moths under one or other of the families: *Sphingidæ*, *Ægeriadæ*, *Thyridæ*, *Zygænidæ* (incl. *Castnia*), *Bombycidæ*, *Noctuidæ* (incl. *Cymatophora*, *Brephos*), *Geometridæ*, *Pyralidæ*, *Tortricidæ*, *Tineidæ*, *Pterophoridæ* (incl. *Alucita*). The more "difficult" families are those in which the structure is divergent by reason of the placing in them genera of uncertain position, intermediary in character, or again isolated by an apparent "dropping out" of connecting forms. The *Sphingidæ*, *Ægeriadæ*, *Geometridæ*, *Tortricidæ*, and *Pterophoridæ* seem more easily recognized than the rest. They may be considered to be more distinctly specialized groups and, perhaps, of more recent origin. Among existing *Bombycidæ*, *Pyralidæ* and *Tineidæ* we may, I believe, look for some of the oldest structural types of moths. Assuming that the feather-wing is a degradational character, as it is found in low forms in other sub-orders, we may consider the *Pterophoridæ* as having been thrown off from the *Tineidæ*, but not as an older type in time of the *Lepidoptera*.

## NOTES ON ORGYIA BADIA, H. EDWARDS.

BY R. H. STRETCH.

Having found this species in abundance at Astoria, Oregon, on July 31 of this year, I give such notes on its transformations as were obtainable, in the hope that it may be the means of settling its specific standing.

On June 17 I found a mass of eggs which I judged to belong to this species. Many larva hatched during the succeeding week at intervals, but I could not induce them to eat, although I offered them rose and willow leaves, and the brood was lost. On my return to the same locality July 31 I collected the larvæ, cocoons, and one perfect male. Other males subsequently emerged (Aug. 6 and 8), but no females. Indeed the bulk of the cocoons found were apparently males (judging from their size) which in this genus is an excellent guide, the sex of the larva being also determinable by both size and color. The males do not vary appreciably, and are so like those of *Orgyia Antiqua* of Europe that I am inclined to think with my friend H. Edwards that the two species are identical.

*Egg*.—Unlike our Californian *O. vetusta* and *O. gulosa*, the eggs are not deposited in a mass on the female cocoons, in a mixture of the down from the body of the parent, but are spread out on the surface of the cocoon in a thin sheet, side by side,



with no covering. The young larvæ consume about half the empty shell.

*Larva*.—Body black both above and below in some cases, in others there is a broad, dorsal, velvety-black line, the sides paler, with an indistinct darker lateral line between the first and second tubercles, sometimes followed below by a pale, broken line. Head black. Second segment very short, carrying two black fascicles directed forward, somewhat tufted at the tip, and a few, long, pale hairs between them at the base. Segments 3 and 4 are short, with four small, yellowish lateral tubercles on each side, with pale, short radiating hairs. Segments 5 to 8 similar, each with a compact yellowish, stiff dorsal tuft or brush, and three lateral tubercles on each side, with pale radiating hairs, that nearest the dorsum orange-colored and conspicuous, the others tawny and obscure. Segments 9 to 11 similar. The black dorsal stripe is narrowly edged with pale yellowish, each segment carrying a few pale marks in the black dorsal line. Four lateral tubercles on each side, the two uppermost orange and conspicuous, the others pale. All with pale hairs. Segment 12 similar to 11, but only two lateral tubercles on each side, the uppermost orange, and a stiff, vertically compressed, black fascicle, directed backward, of which the posterior hairs are the longest. Thirteenth, dusky with long, dusky hairs. Legs brownish. *Length*, 1.00 to 1.25 in.

The special characters are the black appearance of the larva, the pale marginal mottlings of the dorsal line on segments 9 to 12, the hairy orange tubercles, the want of brilliant dorsal fleshy tubercles, and the pale lateral line in pale colored examples. In the black examples, the orange tubercles and dorsal mottling on segments 9–12, are alone conspicuous.

*Imago*. ♂.—Comparison of 5 ♂ *Badia* with 2 ♂ *Antiqua* received from Dr. O. Staudinger, reveals such trifling differences that unless the larval differences are considerable, the two forms must be considered one, and as Mr. H. Edwards suggests *nova* of Fitch must probably share the same fate. My specimens of *Antiqua*, it is true, are somewhat smaller than the five *Badia*, and there is a browner tint on the latter than obtains on *Antiqua*, but so far the markings on the primaries above are identical in both forms, while the secondaries above and the entire insect beneath, as well as the body parts, show no appreciable difference.

San Francisco, August 10, 1882.

## ON CERTAIN CATOCALÆ.

BY C. E. WORTHINGTON.

### CATOCALA LUCILLA. n. s.

Primaries dull white, thickly overlaid with gray and bluish scales, but exhibiting the ground color in several conspicuous



Thaxter, Roland. 1883. "Notes on *Orgyia badia*." *Papilio* 3(2), 38–39.

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