

Additional Notes on MEGATHYMUS YUCCÆ.

By CHARLES V. RILEY.

[Read Nov. 5, 1877.]

Having reared this insect from the egg to the imago since the publication of the first article (p. 323, *ante*), I am able to give some additional facts, part of which appeared in my last State Report. There is but one generation annually, and the characteristic glistening powder that covers the full-grown larva is not secreted till toward the last molt. The habit of living at first within a cylinder made with one of the rolled leaves, webbed across with silk, is very marked, and even where the larva at first works at the base of a leaf, it will web the leaf and feed along up to its tip before entering into the more solid portions of the plant. In extruding the excrement the larva backs up to the end of the retreat, which is kept only partially closed.

Where several larvæ hatch out on the same plant (which not unfrequently happens), there is a struggle as to which shall usurp the privilege of entering the stem, and the first one to do so generally keeps the others out on the leaves, so that in the end they doubtless perish. The parent is by no means particular as to where she fastens her eggs, for Dr. Mellichamp has sent me dry leaves of *Quercus falcata* that had accumulated around his Yuccas and that have eggs fastened to them.

One larva I kept for a long time in a tin box, occasionally supplying it with fresh leaves. It formed a perfect cylinder of silk and excrement around the bottom of the box, fastening thereto the ends of the cut leaves, so that the cylinder was necessarily broken each time the leaves were changed. This specimen went through no less than seven molts at irregular intervals of 10, 11, 24, 14, 61, 15 and 21 days respectively. It changed but little in appearance, except in becoming somewhat paler, after the second molt, and died when about three-fourths grown—death resulting, I think, more from the mould that formed from the excrement, and which it was impossible to prevent, than from the nature of its food. It is doubtful if so many molts are suffered in more natural and healthy conditions.

Another specimen that entered a Yucca plant, in the garden of Dr. G. Engelmann, thrived admirably, extending over a foot

beneath the ground, and attaining full growth by the end of September; while a third, in a potted *Yucca aloifolia* in-doors, hollowed out the entire root, pupated on the 26th of January, 1877, and gave out the imago on the 25th of the following month.

I add the following to complete the description of the larva given on p. 331:

In the *second stage* (after first molt) the head is deep gamboge-yellow, with dark jaws—not polished but faintly shagreened: the cervical shield is narrow, entire, and polished black; and an anal plate is also obvious, also polished, dark brown, with the hind borders thickened and black. The body is olivaceous-brown; the stiff, black hairs of the first stage are very much shortened and pale, and the whole surface has a faintly pubescent appearance, caused by numerous minute points, each giving rise to a short soft hair. The wrinkles of the mature larva are already well defined. In the *third stage* the head is chestnut-brown, and the stiff, piliferous hairs are scarcely longer than the other minute ones on the general surface. The larva has now all the characteristics of the last stage, except in lacking the white powder, and in being of a pale olive-brown color. The cervical and anal shields are still highly polished and black, and the skin, instead of looking faintly pubescent, as in the previous stage, is translucent and glossy.

The imago is more variable than I had supposed. Thirteen other specimens, all from larvæ that fed at Bluffton, S. C., range in expanse from $1\frac{3}{4}$ to nearly 3 inches; 2 ♀'s have the wings broader and the posterior border of primaries more rounded than is usual, resembling *Ægiale* in this respect; 1 ♀ has the spot (usually lacking) on primaries just within the middle of the wing and below vein 2; while in 2 ♂'s, and among them that which I bred in-doors, the yellow is pale almost to whiteness. Some specimens, captured in Florida by Mr. A. Bolter of Chicago, expand only $1\frac{1}{2}$ inches, and the secondaries have five such distinct yellow spots and such broad yellow borders that they look two-banded. Mr. H. K. Morrison captured many specimens in Colorado, the past summer, about *Yucca angustifolia*, and this Colorado form is remarkable for its small size and the paleness of its colors compared with those reared farther south on the larger-leaved, more luxuriant Yuccas. It is also distinguished by a second narrow white line on the underside of secondaries just outside the larger triangular white spot from costal vein; also by the dark spots on this underside of secondaries, generally having a white pupil—a tendency thereto being noticeable in the Carolina specimens. I

cannot consider such differences more than varietal, and would designate this small pale variety as var. *Coloradensis*. The *Ægiale Cofaqui* of Mr. Strecker (*Proc. Ac. Sci. Phil.* 1876, p. 148), taken in Georgia, should, I think, also be considered but a well-marked variety.

Regarding the boring habit in butterflies, I learn from Prof. P. C. Zeller, of Stettin, Prussia, that there is also a Hesperian (*Erynnis alceæ*, Esp.; *malvarum*, Hoffm.) which Kirby gives as common to Europe, Asia and Africa, whose larva bores in autumn into the stems of its food-plant (*Malva sylvestris*), in which it hibernates, and in which it goes through its transformations the following spring.

Regarding other insects that bore the stems of *Yucca*, Mr. Bolter found a Cerambycidous larva at this work in Florida. It appears to belong to *Elaphidion*, enters from the side, but not very deeply, and enlarges the bottom of its burrow. The Curculionid *Scyphophorus yuccæ*, Horn, is said to bore the stem of *Yucca gloriosa** in California.

Further Remarks on PRONUBA YUCCASELLA, and on the Pollination of Yucca.

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In a recent Bulletin of Hayden's *Geological and Geographical Survey of the Territories* (vol. iii., No. 1) is an extended article by Mr. V. T. Chambers on "The Tineina of Colorado," in which, on the very first page (121 of the Bulletin) the following paragraph occurs:

Pronuba yuccasella Riley.—Very abundant in the flowers of "soap-weed" (*Yucca*) as high up on the mountains as 7,000 feet, in the vicinity of Colorado Springs. Mr. Riley says (*Fifth Annual Report Noxious and Beneficial Insects of Missouri*, p. 151), "Front wings uniformly silvery-white." but at least half of the numerous specimens observed by me in Colorado had the wings more or less spotted with black (like *Hyponomeuta*, to which in the form and neuration of the wings it seems somewhat allied, though

* Probably *baccata* or *Whipplei*, since, according to Dr. Engelmann, *gloriosa* does not occur in California.