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Morpho thoosa Smyth.

By ELLISON A. SMYTH, JR., Blacksburg, Va.

(Plate VIII.)

In March, 1903, I described and figured in the ENTOMOLOGICAL NEWS, Vol. XIV, No. 3, page 85, under the name of *Morpho thoosa*, a new variety or form of *Morpho polyphemus* Dby.-Hew. The male only was described from material taken at San Juan Evangelista, State of Vera Cruz, Mexico, and sent me by Mr. E. K. Harvey, of Los Angeles, California.

Since then Mr. Harvey has sent me additional specimens, including a female. I have carefully compared this female with twenty-one females of *polyphemus* and var. *luna*, and find it shows the same character of differences from these, that males of *M. thoosa* bore to one hundred and five males of *M. polyphemus*. I judge that *M. thoosa* will constantly average larger than *M. polyphemus*: males of *thoosa* are $5\frac{3}{16}$ inches in extent; of *polyphemus*, $4\frac{3}{4}$; one ♀ of *polyphemus* is $5\frac{1}{2}$ inches, and one of *luna* $5\frac{5}{8}$; the remainder of the twenty-one ♀♀ do not exceed $5\frac{1}{16}$: the one ♀ of *thoosa* is $5\frac{1}{4}$; as this is only $\frac{1}{16}$ inch larger than the ♂, presumably it is under the maximum.

they roamed or ranged in multitudes across the new land? Only the thicker settling of the country can affect the Arthropods, but I think we are on the straight road to this result.

It is now too late, but we are beginning to understand the results of forest destruction. How greatly does it affect the climate! Or rather, the earth deprived of its covering becomes dried out, so that it is unable to withstand the natural droughts. So it appears to us that there is less rain. In other words, we think the weather has changed. I, for one, do not believe that it seriously changes the prescribed routine. The trees, however, are a great preservative of the earth's crust. Holding it much more firmly together they prevent terrible wash-outs at different seasons.

All creations were placed here for some good, not to be killed in a few years. The animal, vegetable and mineral kingdoms balance each other. When one portion or the other is destroyed in vast quantities the others are unbalanced, and thus the dependent ones also perish or change their food.

What right has man to be the judge? The results of his endeavors, as seen throughout the world, are mostly mean and unprincipled. Far better leave these things to nature, for she alone can make and solve her own problems.

Economic Notes on Aphids and Coccinellids.

By ROSWELL H. JOHNSON, Cold Spring Harbor, New York.

An experimental study of evolution in *Coccinellids*, such as I am engaged in, necessitates a thorough survey of the vicinity for aphids, in order that *Coccinellids* may be there collected and food furnished them. There naturally results a considerable amount of data not pertinent to my subject, but yet of value to economic entomology, which I wish to submit, even though it be fragmentary.

I have found aphids on the following plants in the vicinity of Cold Spring Harbor, Long Island, which I have not seen recorded from eastern North America:

Acalypha virginica L. (upon the roots).

Arctium minus Schk.

Aster multiflorus Ait.

Baccharis haclimiflora L.

Cakile edentula (Bigel.) Hook.

Cuscuta gronovii Willd. (indoors).

Cydonia japonica.

Deringa canadensis (L.) Kuntze.

Iva frutescens L.

Parsnip (on the flower stalks).

Potentilla litoralis Rydb. (indoors).

Rhamnus cathartica L.

Solidago sempervirens L.

Washingtonia longistylis (Torr.) Britton.

A second species has been found upon *Vicia faba* (indoors) and upon the cultivated chrysanthemum (indoors). A species occurs on *C. frutescens* (indoors) different from either of those on the cultivated chrysthanthemum. I realize that this list has merely the value of directing investigation by students of this family.

The variation in resistance to the attacks of aphids in the following plants has seemed to me noteworthy. Two variegated varieties of the myrtle—*Vinca minor*—are much attacked by *Aphis circumflexa*, when grown under glass, while the common non-variegated variety is but slightly attacked on its tender shoots. One succulent-leaved variety of the Paris daisy—*Chrysanthemum frutescens*—which I raised from seed under glass, was not attacked by the aphid so abundant on the typical specimens of the daisy growing alongside. The coccid of the chestnut is seldom seen, except on strong, rapidly growing shoots sent out from stumps. In collecting an aphid from the apple, I have noticed that full grown trees are not badly infested here, whereas spindling shrubby ones, such as are found along the highways and in orchards neglected from the time of planting, are sometimes much infected. The extermination of such trees, I should think, would assist in the control of the pest.

Several of the highly colored aphids can not be successfully fed to Coccinellids, such as *Aphis lutescens*, *Cladobius* sp., and the red aphids of the golden glow, wild sunflower, iva, and

cockle-burr. The light red aphids of the goldenrod are eaten, however. Although some of the woolly aphids are eaten by Coccinellids, they are apparently discriminated against, especially a woolly aphid on *Crataegus*. *Alemodes* is not eaten by them.

Discrimination is shown by the fact that I have found only the following Coccinellids on the plants indicated: chestnut—*Cycloneda sanguinea*; Carolina poplar—*Adalia bipunctata*; *Solidago canadensis*, *Coccinella 9-notata*; willow—*Adalia bipunctata* and *Harmonia picta*.

The fact that *Adalia bipunctata* only was found on *Rhamnus cathartica* and *Euonymus europæus* may, however, be due to the season, the aphids on these plants being the earliest species to be abundant. The much shorter generations of *Adalia*, as compared with *Hippodamia* and *Coccinella*, must assist it in its attack on these early aphids.

I have noticed the great effectiveness of small yellow syrphid larvæ both outdoors and in our vivarium. At some seasons, only a great deal of hand picking makes possible the raising of aphids. The syrphid seems to be more effective than any other enemy of the aphids here, and it attacks nearly, if not all, species, but I have not seen it attack *Alcurodes*—the white fly. Small spiders also are important indoor enemies of aphids. At times a fungus seems to produce a heavy mortality in the aphid of the parsnip.

The larvæ and adults of *Megilla maculata* are common on maize, and I have also found pupæ on the corn silk and leaves of a corn patch, in which I could see no aphids, either on the corn or weeds. They are apparently able to live upon pollen and spores without aphids. This may have some connection with the agility of the larvæ, which exceeds that of the other local Coccinellids, except *Cycloneda sanguinea*.

The period during which a female may lay fertile eggs after isolation has, in the case at least of *H. convergus*, exceeded that given by Burgess, attaining three and one-half months in one instance. I have noticed that in some cases eggs laid by females, which died within a few days, failed to hatch, although the eggs previously laid had been hatched. The last few

batches of eggs laid by a female before death have failed to hatch in several cases, even when a male was kept with the female. I am inclined to conclude, therefore, that failure of eggs to hatch is not necessarily due to sterility, as generally assumed, but may result in some cases from an unfavorable condition of the female. This possibility must therefore be borne in mind in experimental breeding.

Coleopterological Notes, Synonymical and Descriptive.

By H. C. FALL.

Several years ago (1901) a supposed new species of *Mycetina* was described by the writer (Trans. Am. Ent. Soc., XXVII, p. 304) under the name *endomychoides*. From a reading of Horn's description the form in hand seemed to be distinct from *limbata*, but subsequent comparison with the type convinces me that the two are identical. *Endomychoides*, therefore, falls into synonymy.

A little later, on comparing some specimens collected by Professor Wickham, at Coeur d'Alene, Idaho, and sent me as *M. hornii*, with California examples of *hornii*, the two were found to be quite distinct. There can be no doubt that the Californian specimens are the true *hornii*, the differential characters separating this from the Idaho form and the Eastern *perpulchra* are shown in the following table:

Prothorax wider just before the middle than near the base, the sides distinctly sinuate posteriorly: humeral pale spot subbasal, not involving the umbone; dilation of posterior tibiæ of male beginning at or a little below the middle. . . .	perpulchra Newm.
Prothorax with sides parallel or slightly divergent posteriorly, not evidently sinuate before the basal angles: humeral pale spot involving the umbones.	.
Form less stout, elytra more finely punctate, size a little smaller; posterior tibiæ of male not dilated, but arcuately bent apically.	hornii Crotch.
Form stouter, elytra more coarsely punctate, size larger; posterior tibiæ of male dilated at apical third	idahoensis n. sp.