HYBRID BUTTERFLIES OF THE GENUS BASILARCHIA.

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On August 19, 1910, at Alstead Center, New Hampshire, several females of Basilarchia archippus, reared in captivity, were placed in a breeding-cage with males of B. arthemis captured in the neighborhood. The butterflies were fed with dilute honey applied to heads of Prunella and clover.

On August 20, a pair was found in copulation, remaining in that state for about half an hour. Afterward the female was removed from the cage and placed on willow shoots out-of-doors, under a cheese-cloth covering. Every leaf of the willow had been inspected; a wooden baseboard was provided, and all crevices were tightly packed with cotton. The butterfly was a crippled one, and found difficulty in balancing herself upon the leaves. Some of her eggs were laid upon leaves in the normal way, a few on stems, and many on the cheese-cloth in the vicinity of the foliage. In seven days she laid sixty-two eggs, and then died.

The larvae began hatching nine days after the beginning of oviposition, but in all only nineteen appeared; and it was noted that none of these came from eggs laid toward the end of the period of oviposition.

The larvae grew slowly, but were favored by unusually mild weather, and began to construct hibernacula early in October. On October 21, sixteen were found hibernating; the others had disappeared. The hibernating larvae were transferred to a small outdoor shelter near my laboratory in Milton, Mass.

On April 27, 1911, they were placed on willow shoots under a cheese-cloth shelter. The willow shoots had been started indoors and kept under close scrutiny, and were known to be free from other larvae.

On May 7, the larvae began to issue from their hibernacula. In all ten appeared, but one was very belated and weak, and soon
died. One other was injured by a fall after pupating, and died. Eight, all males, reached the imago stage successfully. The small size of the pupa which died warranted the surmise that it, also, was a male.

The butterflies were all closely like the type specimen of *arthechippus* in the Museum of Comparative Zoölogy, described by Scudder (1889), and the two specimens captured on the wing in Alstead, N. H., and deposited in the same collection. The older specimens are likewise all males.

Diligent efforts were made to mate these butterflies with females of allied species. *Arthemis, archippus, astyanax* and *proserpina* were all tried, in different breeding cages and in various numbers and groupings, but no mating occurred. Both sexes, however, in several instances showed marked sexual excitement, and their failure to copulate is probably to be ascribed to some unfavorable element in the illumination of the cages at critical moments.

On August 30, 1910, at Alstead Center, a female *Basilarchia astyanax*, reared in captivity from a larva obtained near Brooklyn, N. Y., mated with a male *arthemis* captured in Alstead. The duration of copulation was fifty-five minutes. The female was afterward imprisoned over carefully-inspected wild cherry shoots, on the leaves of which she deposited eighty-two eggs. Oviposition was begun on September 5, and extended over nine days.

The eggs were extremely slow in hatching, and no exact count of the young larvae was obtained. Forty-one survived the early frosts, and the construction of hibernacula began on October 21. The hibernating larvae were kept through the winter in an outdoor shelter in Milton, Mass., and bagged out on inspected shoots of wild cherry April 27, 1911. On May 7 they began to emerge from their nests, but their number had dwindled to ten when the count was made. All of the ten pupated successfully, but only eight reached the imago state: five males and three females, all rather dark examples of *proserpina*.

Efforts to breed these butterflies with one another were unsuccessful. Attempts were then made to mate them with *arthemis* and *astyanax*, the two parent species; and the females were introduced into the boxes containing the males of *arthechippus*, already described; but no copulation occurred.
Field—Butterflies of the Genus Basilarchia.