

bracteata (Swartz) Griseb, in Veracruz and Yucatán, as well as in *Aechmea mexicana* Baker and *Vriesia gladioliflora* (Weindl.) Ant. in the "Los Tuxtlas" region, Veracruz, and in *Vriesia chiapensis* Matuda, from Bochil, Chiapas. The caterpillars feed on bromeliad leaves, and are semi-aquatic in their habits. The adults emerged in February.

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THE EFFECT OF CAUTERIZING THE MNPPM OF THE PUPA OF THE MONARCH BUTTERFLY (*DANAUS P. PLEXIPPUS*) (DANAIDAE)

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The pupa of the monarch butterfly possesses well-defined surface pigmented areas (color plate, e) which, owing to the configuration of the lamellae of the cuticle plus the presence of a yellow epidermal pigment, imparts to them the appearance of golden spots and hence they have been referred to as "gold spots" in the literature. Since "gold spots" is not descriptive of these structures the terminology *prismatic pigmented maculae* (PPM) has been suggested (Urquhart & Tang, 1970).

Since the PPMs are constant in number and position and further since it was suspected that they may perform specific functions, terms have been applied to each pair, the designation of such terms referring to morphological structures of the developing imago (Urquhart, 1960).

As to the possible function of the PPMs, it was suggested that perhaps they acted as "light receptors" controlling in some manner the development of the imago (Urquhart, 1960). However, it was later indicated that light did not appear to have any effect on either the emergence time or the morphological structures of the adult butterfly (Petersen, 1964; Taylor, 1964).

By utilizing a micro-cauterizing technique (Urquhart & Dampney, 1969) the tissues of the lateral ulnar (LU), lateral notal (LN) and median ocular (MO) PPMs were destroyed and it was found (Urquhart and Tang, 1970) that certain areas of the wing became faded (with respect to the treatment of the LUPPM and LNPPM) or that the head lacked scales (with respect to the treatment of the MOPPM).

In the present report the tissues of the median notal MNPPM (Fig. 1) were destroyed. Since the MNPPMs possess a much thinner layer of cuticle, compared to the other maculae which have been previously studied, one series of 25 pupae were treated for 3 secs. fulgurating time and a second series for 5 secs. Both maculae of a pair were treated in some pupae and only one of the pair in others. This was done to compare results of the effect of cauterization on one specimen thus eliminating the possibility of individual variation. Twenty-five pupae were used as controls in which an area remote from the MNPPM, but still within the notal region, was cauterized.

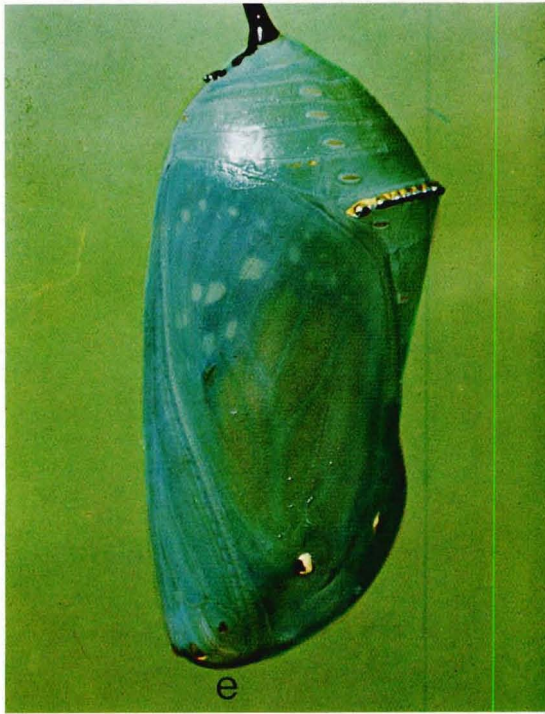
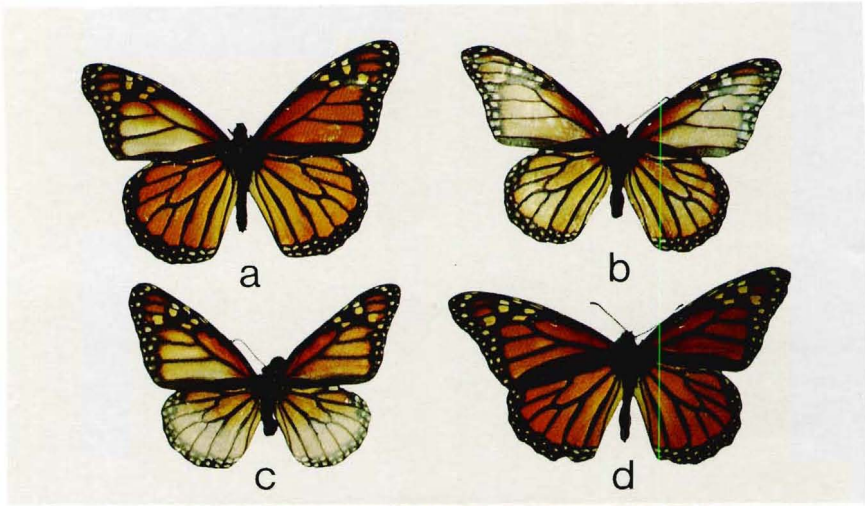
Of the 25 specimens cauterized for 3 secs., none exhibited wing fading, thus indicating that the time period was not sufficient to destroy the tissue of the PPM.

Of the 25 pupae cauterized for 5 secs. fulgurating time, 23 adults emerged and all but two of them indicated varying degrees of wing fading. Fourteen specimens indicated fading in the mesothoracic wings, mostly in the cubital area (Color plate, a- in this particular example only the left MN was treated); one specimen (Color plate, b) indicated fading in both meso- and metathoracic wings; six specimens (Color plate, c) indicated marked fading of the metathoracic and slight fading in the cubital area of the mesothoracic wings; two specimens indicated no discernible fading (Color plate, d). No fading was indicated in the controls.

It has been previously suggested that the PPM might govern wing pigmentation for fairly well-defined areas of the body (Urquhart & Tang,

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Color Plate: a, b, c, d—effect on wing pigmentation of cauterization of the MNPPM of the pupa; e—pupa of the monarch butterfly showing the PPMs ("gold spots") on one side.



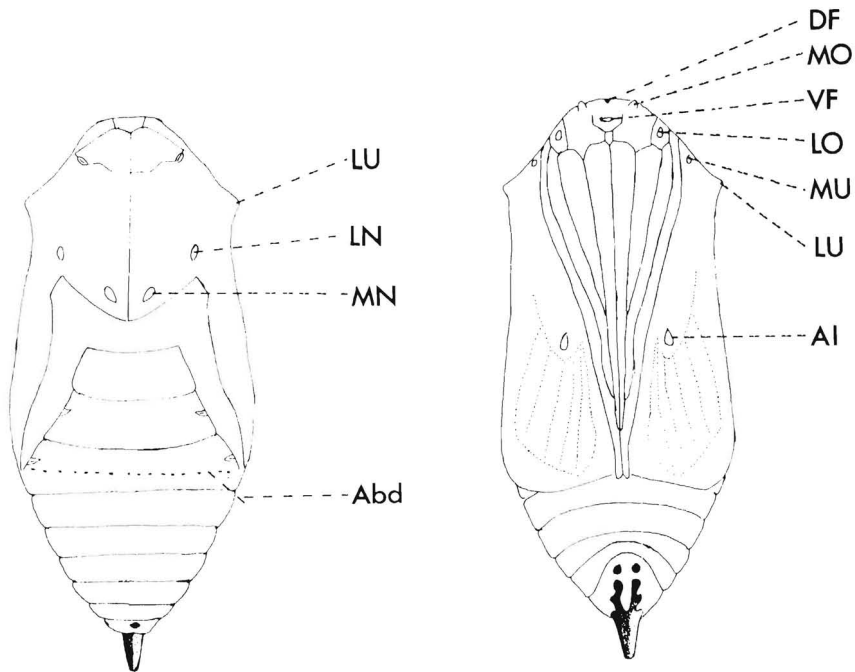


Fig. 1. Abbreviated designations of the PPM: LU, lateral unlar; LN, lateral notal; MN, median notal; Abd, abdominal; Df, dorsal frontal; MO, median ocular; VF, ventral frontal; LO, lateral ocular; MU, median unlar; AI, alar.

1970). However, the present experiment would seem to indicate that, although the hind wings became faded as a result of cauterizing the MNPPM, which did not occur with cauterizing the LUPPM and LNPPM, the degree of variation is such as to presuppose an interrelationship between the various PPMs. Thus, one pair of PPMs may govern wing pigmentation in a certain area of the wing, as in the case of the LU and LNPPM, while others, although primarily governing pigmentation in another area, such as the MNPPM and the metathoracic wings, may also affect other areas, such as the mesothoracic wings.

It is not known in what manner the PPMs influence the pigmentation of the scales of the wings nor is it known for what period of time the PPMs remain active in controlling scale pigmentation. In our experiments we have timed the period of cauterization within 24 hours after the appearance of the pupa from the larval skin because our histological studies indicated that the pigment disappeared from the cell cytoplasm after 24 hours and also the morphology of the tissue cells changed so as to be indistinguishable from the surrounding epidermal tissue.

It may be conjectured that PPMs found in the pupae of other families of Lepidoptera will exhibit results similar to those indicated in the present and previous papers.

ACKNOWLEDGMENTS

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CERCYONIS PEGALA BLANCA, A "MISSING TYPE" IN THE EVOLUTION OF THE GENUS *CERCYONIS* (SATYRIDAE)

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Each of the smaller three species of the nearctic *Cercyonis* has a very distinctive whitish race which is adapted to the arid alkaline flats of the western deserts of the United States. *Cercyonis meadi alamosa* Emmel & Emmel occurs in salt flats of the isolated San Luis Valley of south-central Colorado at 8,500 feet elevation (Emmel & Emmel, 1969). *Cercyonis sthenele paulus* Edwards is a white-marked form occurring in extensive populations throughout the western portions of the Great Basin between the Rockies and the Sierra Nevada. *Cercyonis oetus pallescens* Emmel &