ABOUT THE "PUMPING ACTION" OF A *PAPILIO* AT WATER

by WALFRIED J. REINTHAL

The phenomenon of pumping water by different Lepidoptera has been observed by entomologists in different countries, and some of their observations have been published. CLENCH described (*Lepid. news* 11: 18-21; 1958) his interesting observations on two species of moths "pumping at water" in the Carnegie Museum Powdermill Nature Reserve, Westmoreland County, Pennsylvania. WELLING described (*Lepid. news* 12: 170-172) a similar phenomenon from Gildersleeve Mt. State Park, Lake County, Ohio, also occurring with moths, and involving some of the same species observed by CLENCH. Further, he described the same action by certain species of *Papilio* in Yucatán and Quintana Roo, Mexico. In the last case a large number of *Papilio epidaus* was involved.

An observation was made by this author during the late afternoon of September 2, 1961 of similar behavior of a male *Papilio glaucus*. While at a swimming pool I noticed the butterfly flying around, first low over the water, then along the pool's sidewalk. It seemed that the insect was looking for water to satisfy its thirst. After a while it alighted on a wet spot, of about three to four inches in diameter and containing no more than a few tablespoons of pool water left on the concrete sidewalk by a swimmer. As the butterfly was located only a couple of feet from the edge of the swimming pool, I was able to approach and observe it without leaving the pool. After taking a few sips of water, the insect expelled a drop of semi-clear, somewhat milky-looking fluid out of its abdomen. After sucking for some ten to fifteen seconds the butterfly started exuding water regularly from its abdomen.

Now I became more curious and began observing it very closely, and I noticed that both its head and abdomen functioned synchronically. The rate of discharging water from its anal opening was about two, occasionally only one, drop every five to ten seconds. This pumping in of the water through the proboscis and at the same time eliminating it from intestines went on uninterruptedly for about the next twenty minutes. During this interim over two hundred and fifty drops of water were counted as being eliminated at the rate mentioned above.

Nothing in particular seemed to disturb the insect. It was actually so deeply absorbed in its activity that several gusts of wind blew the butterfly over, but this did not interrupt its activity, and immediately the insect regained its position. A swimming pool guest walked by, at a distance of only two feet, and the butterfly did not pay any attention.

Although two children ran by almost striking the insect, it only flipped its wings once and went on with the sucking. Encouraged by this unperturbed attitude, I moved even closer so that my last observations were made from a distance of few inches only. If two noisy boys had not jumped out of the pool and scared away the butterfly, it seems that the above described activity of the papilionid would have continued beyond my twenty minutes of observation. Even then, it flew around for a while seemingly looking for more water, and actually sat down at another wet spot where it started sucking again. This lasted only a short while until the insect was disturbed again and flew over a fence.

The causes for this strange behavior are not fully understood, but apparently it was not only the intake of water to satisfy the insect's thirst. It appeared as if the insect had to give itself a sort of internal lavage, syphoning the water through its body, retaining none or very little and trying to eliminate with the water some waste product from its body.

The exact time of this observation was from 6:00 to 6:30 P.M. The weather was warm but not hot nor particularly humid, about 74° F. at that time, with partly cloudy skies. The observation site was a country club's large swimming pool at the city limits of Knoxville, Tennessee.

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ADDITIONAL NOTE ON FOOD PLANT OF *SPHINX KALMIAE*

In the *Journal* (vol.15: p.64; 1961) I reported a food plant of *Sphinx kalmiae* J. E. Smith to be *Diervilla lonicera.* The third of August 1961 I took a *kalmiae* from which I secured 138 eggs. The young larvae took readily to *Diervilla.* As the supply of this plant was somewhat limited, a search was made for a substitute. Fortunately I found two larvae and three eggs of *kalmiae* on what is locally known as Mountain Holly (*Nemopanthus mucronatus*) which grows commonly in the area around Hazelhurst, Wisconsin. The young larva took readily to the new food plant and in the process of supplying the food I found several larvae and eggs of *kalmiae.* I also found a larva and egg on *Diervilla lonicera.* This establishes the voluntary selection of these food plants. I have a feeling that *mucronatus* is the preferred one. The moth has a more extended period of flight than any of the other local sphingids, being on the wing from early June till the middle of September. The identity of *Nemopanthus mucronatus* was determined for me by the Milwaukee Museum through the kindness of Mr. J. R. NEIDHOEFER of Milwaukee.

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