Life History and Habits of *Apelma brevis* Johannsen (Chironomidae)

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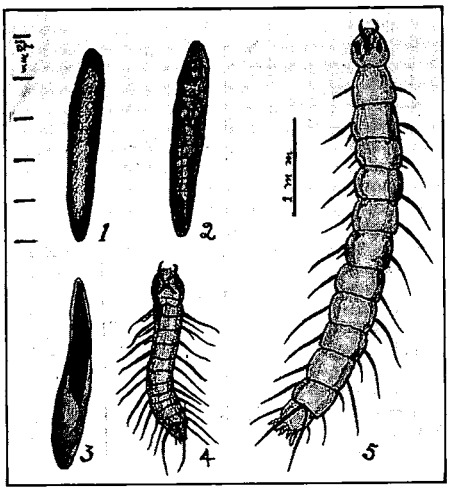
Investigating pests of pineapples, I discovered the larvae of these tiny midges usually present in water which collects in the axils of the central leaves. Apparently these larvae feed upon wind-borne, decomposing organic matter that naturally washes down into their retreat. I should note, however, that the mouth of the larva is provided with a pair of needle-like hooks, which it uses in pulling itself forward. These hooks are capable of puncturing the tender white tissue at the base of the leaves, and possibly



Camera lucida drawings of the early stages in the life history of the pineapple midge, *Apelma brevis* Johannsen. 1, the egg, about half a millimeter in length; 2, the hatching larva, inside the egg; 3, the empty shell; and 4, the newly hatched larva. These are all drawn on the same scale; 5, the full-grown larva, dorsal view, about 4 millimeters in length. Note particularly the needle-like jaws which the larva uses to pull itself along when moving about on the surface of the leaf.

they do this in the ordinary movements of the maggot. But there are no visible abrasions of the epidermis, and we have no conclusive evidence that they cause infections.

I was unable to determine the species, so specimens were sent to Dr. J. M. Aldrich, of the U. S. National Museum, August 12, 1927. Dr. Aldrich finally sent the specimens on to Prof. O. A. Johannsen of Cornell University, who replied:

Photograph of side view of the head of full-grown larva (greatly magnified) to show the claw-like jaws, though they are partly retracted. The single front foot, with its fringed margin, is also well shown here.

" . . . . This is a new species of Apelma, the members of which, so far as known, live in the axils of leaves of tropical plants. There are two European species whose habits are unknown . . . ."

October 28, 1927, Dr. Aldrich wrote:

"Professor Johannsen has drawn up a paper describing your little Chironomid injuring pineapples, as *Apelma brevis* new species. He has returned three of the five specimens to the National Museum, one being the holotype. . . . " This description was published (Ent. Soc. Wash. vol. 29, p. 205, 1927). I made a brief note of it in our own Proceedings, vol. vii, no. 2, p. 206, February 2, 1928.

Tracing the life history I found difficulty, at first, in locating the eggs of the fly. Later, however, I discovered that they are

not placed down in the water pockets, as one might expect, but higher up on the leaf blade—at about the lower edge of the green area where it joins the white. The eggs are cigar shape and quite dark in color, about one-half millimeter in length. The incubation period lasts four days, when the larva splits the shell down over half its length, and crawls out. After feeding for twenty-eight to forty-five days the larvae pupate in the water pockets, and emerge as flies four days later. Thus the whole life cycle requires a period of only thirty-six to fifty-three days—and there is a continual series of development throughout the year.