

NOTES ON DEINOCERITES CANCER THEOBALD.

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The writer has had occasion to study this mosquito in the course of his work in connection with Dr. L. O. Howard's forthcoming monograph of the Culicidae. As a number of incorrect statements have been published about *Deinocerites* the following observations seem timely.

Deinocerites cancer was found by the writer on both coasts of Costa Rica, at Puntarenas on the Pacific side and at Port Limon on the east coast. The species was first encountered far up the mangrove inlets behind Puntarenas. It was established in the holes of a very large and brightly colored species of crab (*Cardisoma crassum* Smith). These crab-holes were near the head of tide water, above overflow, often a considerable distance from the water, and the water in them must have been very nearly if not quite fresh. In some of these holes on very low ground the water was quite near the surface, and the larvae in great numbers and of various sizes, could be seen suspended by the surface film. About Puntarenas *Deinocerites* appeared to be the only species of mosquito inhabiting the crab-holes. At Port Limon the writer found two other species associated with *Deinocerites* in crab-holes, in fact it was there greatly outnumbered by them. One of these species has been recently described by Mr. D. W. Coquillett under the name *Tinolestes latisquamma* and the other he referred to *Culex scholasticus* Theobald.* Dr. M. Graham has found *Culex janitor* Theob. associated with *Deinocerites* in crab-holes in Jamaica (Theobald, Monogr. Culic., v. 3, p. 185). At Port Limon the crab-holes were on a side hill, in a cacao orchard at some height above sea-level. The water in them was entirely fresh, supplied by a small brook which had worn a channel into the stiff clay of the hillside. Most of these holes went to a great depth to reach the water, so that the mosquitoes living in them never see the light until they attain the winged state. This record of the occurrence of the larvae of *Deinocerites* in fresh water is not made in contradiction of the previous records of its occurrence in brackish water. The larva was found in brackish water by Dr. H. G. Dyar in southern Florida and by Mr. A. Busck in the west Indies and it would seem that it thrives best in brackish water and there the species of *Culex* are not associated with it.

The imagos likewise inhabit the crab-holes and during the day rest upon

*It is, however, apparently not the form so identified by Dr. Dyar and the writer (Journ. N. Y. Ent. Soc., xiv, 182, 1906).

the sides of the hole. It takes considerable disturbance to drive them out and they then fly slowly out of the hole and sometimes to some other nearby hole. Usually however, they alight in the immediate vicinity of their hole, upon the ground or very near it, and after a very short interval fly back into the hole. At twilight the adults may be seen dancing in a small cloud close to the mouth of the crab-hole. Mr. Busck, who has had many opportunities to observe *Deinocerites* in the West Indies, has found that the species swarms in the morning twilight as well as in the evening. As with other mosquitoes, the swarming indicates the time of sexual activity and Mr. Busck has frequently noted copulation at such times.

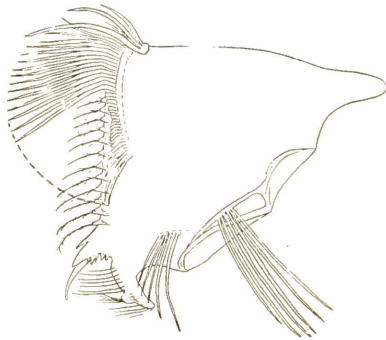
Dr. Grabham states of *Deinocerites* "only comes out to feed at night, is a voracious bloodsucker" (Theobald, Monogr., v. 2, p. 356). In contradiction Theobald in v. 3, p. 279 of his Monograph quotes Dr. Low who "could never get them to bite. In many dissected from Calliagua, a village in St. Vincent, I never saw any traces of blood in their stomachs." In the writer's experience, *Deinocerites* could never be induced to bite nor would it even alight upon the person. Mr. Busck is also quite positive that it does not molest man. In Trinidad numerous crab-holes, each with its swarm of *Deinocerites*, are found in the immediate vicinity of the houses—often within a few feet. Still these mosquitoes never enter the house nor is anyone ever bitten by them. Perhaps the larvae even serve a useful purpose in preventing the water in the crab-holes from becoming offensive.

While this mosquito is remarkable in many ways there are no structural characters which, in the writer's opinion, justify the creation of a distinct sub-family for it as has been done by Miss E. G. Mitchell in *Psyche*, v. 13, p. 19. The unusual length of the second antennal joint, brought forward as a discovery of Mr. Coquillett, has already been commented on at some length by Theobald (Monogr. v. 2, p. 215-217; v. 3, p. 275-277).

The larval peculiarities of *Deinocerites* pointed out by Miss Mitchell are merely an amplification of structures present in other Culicid larvae. The groove in which the mandibles move is by no means peculiar to *Deinocerites* but common to all mosquito larvae and present in the larvae of many other Nemocera. To show the correspondence of parts and their modification ventral views of the heads of *Deinocerites cancer* and *Janthinosoma jamaicensis* are here figured. The integument of the ventral surface of the head is transversely folded in the region of the mouth and forms a ridge extending entirely across the head. In the depression behind this ridge lies the mouth with its ap-



Janthinopoma jamaicensis—head of larva, ventral view. (Fig. 2.)



Culex excrucior D. & K.—mandible of larva. (Fig. 3.)

pendages. It is this transverse ridge with its supporting chitin laterally expanded that forms the projecting angles so characteristic of *Deinocerites*. The same lateral expansion of this region occurs again in the larva of the Sabethid *Lesticocampa lunata* Theobald. The modification of the ridge into rounded lobes, outward from the maxillae, as illustrated in the accompanying figure of *Janthinosoma jamaicensis*, occurs in most mosquito larvae but may be absent, as in *Psorophora*. The mandibles are truly most strikingly modified in *Deinocerites* but they are by no means unique, as Miss Mitchell asserts. There are no less than five species of *Culex* known to the writer which present similar modifications in the form of the mandibles. A mandible of one of these species, *Culex vector* Dyar Knab, drawn by Miss Mary Carmody, is here reproduced (fig. 3). It will be noted that the basal portion of the mandible, instead of being rounded off as is the case in most mosquito larvae, is drawn out into a slender straight projection which corresponds to the curved projection in *Deinocerites*. The toothing of the cutting surface of the mandibles shows various modifications, particularly in the tropical species examined by the writer, but it is doubtful that they will have any classificatory value.

Miss Mitchell has fallen into error in her description of the labial plate of *Deinocerites*. There are three of these structures, overlapping each other, present in Culicid larvae. Usually the outer one of these plates is the stoutest and heavily pigmented so that it obscures the other two which are more delicate and transparent. It is this outer heavily chitinized plate which has been made use of in descriptive work, while the other two have remained unnoticed or at least disregarded. It is one of these inner plates that Miss Mitchell describes in her article. The outer plate is perhaps difficult to find in dissecting, but it is obvious enough when the entire head is examined ventrally. It is usually small, and pale like the head integument, but its general form corresponds with that of other mosquito larvae. It may be remarked in conclusion that Raschke (*Die Larve von Culex nemorosus* 1887) does not consider this plate a labial structure but as belonging to the integument of the gular region. M. T. Thompson has recently expressed the same belief and terms the part "mental sclerite," (*Proc. Boston Soc. Nat. Hist.*, v. 32, p. 170).

