

section of the bulb (pl. 7). The walls of the canals are constructed along their outer edges of exceptionally thick chitin, which cannot easily be folded in. The action of the transverse muscles is obviously to decrease the volume of the bulb. The first thing that must occur as this constriction begins is that the opposing chitinous walls immediately adjacent to the canals meet, although the canals themselves remain open. The point of contact of the walls now proceeds toward the center of the bulb, until, at the completion of contraction, the bulb cavity is mostly obliterated.

A fourth misconception, not entirely referable to Emery, but partly stemming from other authors such as Janet, is that the crop is a passive organ which functions only as a storage center. Examination of entire and dissected *Camponotus*, the crops of which were distended with stained honey, showed that the crop wall is capable of strong and almost total contraction, which at the very least would suffice for regurgitation by itself. In dissected material the movements were most marked in the posterior ring muscles, but they often proceeded anteriorly to include the entire crop. In fully intact but excited and active individuals the crop, when only slightly distended, could be seen through the body wall to undergo very swift pulsations, forcing almost its entire contents into the forward part of the gut.

Our interpretation of the action of the proventriculus in *Camponotus americanus* is as follows. The calyx and occlusory tract are devices for checking the posterior flow of liquid as fluid pressure builds up in the crop. They are able to do this without muscle contraction, simply because more pressure is required to force liquid through the filtering slits than is present even when the crop is considerably distended. Muscle action can have little effect on the width of these filtering slits and therefore cannot exert a valve-like control *per se*. In the euformicines the muscularis can act as a secondary damming device by closing the calyx and preventing liquid from reaching the filtering slits. But in dissected individuals with distended crops the closure of the calyx was not a necessary device, and liquid from the crop failed to reach the bulb even when the calyx was open and its cavity filled. The pressure re-