

quired for passing liquid through the calyx and tract is provided by the bulb. As the bulb starts its contraction, its four canals are sealed off, perhaps imperfectly in the posterior portion, but at least completely enough to act as a valve to prevent most of its contents from flowing back into the calyx lumen. As the bulb cavity collapses under muscle contraction, the contents are forced back through the cylinder and into the midgut. As the muscles relax and the cavity expands due to the elasticity of its chitinous framework, the canals of the posterior portion communicate again with the lumen and allow liquid from the anterior canal system to pour in. Probably some of the liquid is sucked in through the filtering slits of the oclusory tract also, but the body of the tract is so extensive and its walls so densely covered with hairs that traffic through it must be relatively insignificant. A forward flow of liquid from the midgut is prevented by the cylinder valve, the thin walls of which can collapse under external pressure.

As we presently understand it, the significance of the characteristic elaboration of the dolichoderine-formicine proventriculus is that it allows the crop to store large amounts of liquid. As previous authors have suggested, it regulates the amount of this liquid which passes into the midgut and in this way separates the individual supply of food from the communal supply. In the concept presented here, it is considered that the primary feature of the advanced proventriculus is the filter area, while the other structures are developed supplementarily. This area acts as a plug guarding the midgut, and liquid can be forced past it only under pressure from the bulb. As its name implies, it also acts as a very thorough filter, and perhaps correlated with this is the fact that the midgut wall is so constructed as to be able to handle only small amounts of pure liquid.

The calyx of the euformicines represents an extension of the oclusory tract which allows a greater filtering area and possibly provides a secondary valvular control by its ability to collapse and occlude liquid from its lumen. In non-euformicine types the calyx is either absent or does not function in this capacity, and the oclusory tract is more massive. In the section *Alloformicinae* of Emery (Melo-