

the internal glandular structures of the gaster and also in the proventriculus. Wheeler (1928) reported that the dolichoderines probably arose from the ponerines through the annectant genus *Aneuretus*. Indeed, Brown (1954) and Wilson, Eisner, Wheeler, and Wheeler (1956) have likewise recognized the ancestral relationship of *Aneuretus* to the dolichoderines, but have emphasized that *Aneuretus* is most likely annectant with *Nothomyrmecia*-like stock. Brown (1954) has indicated that the Aneuretini may also have given rise to the Formicinae, but he no longer favors this view (Wilson, *et al.*, 1967). Robertson (1968) has reported that the structure of the venom apparatus provides a direct link between the Ponerinae and Formicinae. Reid (1941) found the dolichoderine thorax of a generalized type like that of *Myrmecia* and reported no significant differences between the thoraces of the dolichoderines and formicines. An examination of wing venation does not contradict the conclusion that the formicines may have been derived from the dolichoderines (Brown and Nutting, 1950).

Palpal segmentation is mostly primitive throughout the Dolichoderinae and Formicinae, and there are no developments in mouthpart morphology that will separate them from one another or from the Myrmeciinae. The general configuration of the labrum, stipes, and galea and lacinia are often quite similar [e.g., *Dolichoderus attelaboides* (plate 89) and *Gigantiops destructor* (plate 92)]. The mouthparts of *Acropyga* sp. (plate 90) depart from the basic formicine type in construction of the mandible, labrum, and maxilla, in the presence of paraglossae, and in the reduction of the palpi. These developments may be expressions of the highly specialized, hypogaecic lifeways of the genus. *Acropyga* obligately attends root coccids on cacao, coffee, and bananas (Weber, 1944). [Forel (1893) placed the New World species of *Acropyga* in the subgenus *Rhizomyrma*, using among his subgeneric descriptive characters the presence of a 2-segmented maxillary palpus and a 3-segmented labial palpus. It is noteworthy that the Brazilian species dissected in this investigation has a 1-segmented maxillary palpus.] The presence of paraglossae in *Acropyga* (without sensory pegs) (fig. 356) is difficult to explain. It is not known whether they are homologous with the paraglossae of the ponerines and myrmicines or whether they are secondary developments peculiar to this genus.

The dolichoderines and formicines have exploited such adaptations as crop storage and regurgitative feeding, and they apparently possess generalized mouthparts. These generalized mouthpart characteristics, including primitive palpal segmentation, are probably correlated with epigaeic foraging behavior and utilization of liquid food sources such as plant exudates and homopteran honeydew. Eisner (1957) has shown that their proventriculus is particularly adapted for crop storage in that damming of the crop is accomplished passively with no expenditure of energy. Unlike other ants whose first and second gastral segments are the third and fourth abdominals, the sclerites of their first gastral segment are unused. This certainly facilitates gastral expansion for crop storage.