

Gaster Preparations

The gasters of most species whose mouthparts were examined were dissected to determine the degree of fusion of sternite to tergite in both the first and second gastral segments. These dissections can be performed easily, and in many species; e.g. the dolichoderines and formicines, the degree of fusion or nonfusion can be determined without dissection. The dissection itself consists merely of pulling the tergites and sternites apart to ascertain whether they are securely fused or are connected only by membrane. Generally the relationship of these sclerites to one another is obvious; but in some species the tergites and sternites are tightly joined in such a way as to be intermediate between fusion and nonfusion.

Method of Illustration

All drawings were done by the author, and most were made with the use of a Bausch and Lomb VH type micro-projector. With this instrument, structures can be projected and their images traced directly on drawing board. The scale of a stage micrometer can also be projected on each drawing, providing an easy method of scaling the structures drawn. The glossa was usually reconstructed in the drawings.

Results of Investigation

General Features of Ant Mouthparts

Detailed morphological investigations of ant mouthparts have appeared only occasionally. Bugnion (1924, 1925, 1930) produced the most extensive examinations of the mouthparts themselves; Janet (1899, 1904, 1905, 1911) exhaustively studied the musculature and segmentation of the ant head. Investigations including observations on the mouthparts of individual species or groups of species have provided much general information. Among others, Lubbock (1877), Forel (1874), Mukerji (1933), and Pavan and Ronchetti (1955), have produced studies of this nature. Wheeler (1910) and Forel (1928) give surprisingly brief descriptions of ant mouthparts in their general treatises, and both drew heavily from the works of Janet. In addition, the ant mouthparts, and the labium in particular, have never been clearly homologized with those of other Hymenoptera. As a result, it is important to present a clear description of the ant mouthparts and to review the terminology associated with these structures. As few as possible new terms are introduced here, and even these are presented only for the sake of convenience in this particular investigation. New terms are italicized when first introduced.