

Mandibles

The articulation of the mandibles in the ants is dorsoventral, permitting the mandibles to move in one plane only, toward and away from the median longitudinal axis of the body (Matsuda, 1965). The mandible is provided with 2 muscles, an adductor and abductor (fig. 6). The adductor is voluminous and is the most prominent muscle within the head capsule. It is divided into several distinct fascicles and is inserted on the internal margin of the articulatory border of the mandible, by means of a large tendon. The much smaller abductor is ventral to the adductor and is inserted on the lower external margin of the articulatory border (Janet, 1905, 1911). There is no musculature within the mandibles. Marcus (1944, 1945) gives detailed descriptions of the mandibular musculature and articulation for several species of ants, and Barth (1960) describes the mandibular mechanism of *Odontomachus chelifer*. Brown and Wilson (1959b) have detailed the mandibular musculature and action of *Strumigenys ludia*.

The mandibles are usually provided with numerous setae in various arrangements and positions. Some arrangements are highly ordered along the masticatory margin of the mandible. Several xeric ant species, such as those belonging to the genus *Pogonomyrmex*, have on their mandibles and on the ventral surface of their heads, long, curved setae called psammophores or ammochaetae. These are used like baskets to carry sand and soil while excavating nests (Spangler and Rettenmeyer, 1966). A bizarre arrangement of unusual, heavy setae has been described for the ventral surfaces of the mandibles of *Tatuidris tatusia* (Brown and Kempf, 1967). These setae form a mandibular brush whose function has not yet been determined.

Janet (1904) described a series of sense organs on the mandibles and called these the *organes à ombelle*. No research has been performed on the sensitivity of these nor of the mandibular setae. The shape of the mandibles varies not only between species, but also frequently between the castes of a single species. The articulatory margins and the general configuration of the proximal end are relatively uniform throughout the *Formicidae*. Forel (1874) described the ant mandible in terms of the articulatory surface, external margin, internal margin, and terminal margin. The terms employed here are: the articulatory border, the external margin, the basal margin (= internal margin of Forel), the masticatory margin (= terminal margin of Forel), and the internal margin, comprising the basal and masticatory margins combined (fig. 6). These terms are not completely applicable to all mandibles (e.g., those of *Eciton* soldiers) and so are of limited value. Ettershank (1966) in his revision of a number of myrmicine genera introduced several new morphological terms for the mandible. Two of these are used here: the mandalus, a small unpigmented area at the base of the mandible on the dorsal surface; and the trulleum, a basin-shaped