



FIG. 4.—*C. morosus*, worker alitrunk, ventral view.
FIG. 5.—*C. morosus*, worker petiole, lateral view.

chitinous ventral plate. Muscle fibers attach to both the ventral and dorsal pharyngeal surfaces, and the ventral pharyngeal plate bears two projections that may serve in muscle attachment. The chitinous lining or intima of the pharynx is progressively thinner as it approaches the beginning of the esophagus. Anterior to the "brain," the intima of the esophagus produces numerous hair-like spines that project into the lumen (Fig. 6). The esophagus is invested with a circular layer of muscle. Longitudinal muscle fibers were not apparent in our preparations. The esophagus is devoid of internal spines but subsequently associated ventrally with two bundles of longitudinal musculature as it passes between the supra- and subesophageal ganglia. Posterior to the brain the longitudinal muscles disappear, while a sparse circular musculature remains. Underlying the chitinous intima of the pharynx and esophagus is a continuous epithelial layer of varying thickness.

In the alitrunk the esophagus expands and both the intima and epithelium become thinner and cause the esophageal wall to appear more membranous. A layer

of circular musculature surrounds the esophagus at this point, but a longitudinal layer is not apparent.

The arrangement of the gastral digestive structures of *C. morosus* was described by Gotwald (1971). Briefly, the crop and midgut (ventriculus) lie juxtaposed and occupy the anterior half of the gastral cavity. They are connected by a reduced membranous proventriculus. The midgut tapers posteriorly to form the intestine which expands posteriorly to form the rectum. The Malpighian tubules attach approximately at the junction of the midgut and intestine.

In the gaster the esophagus expands to form the crop. The intima and epithelium are both more distinct in the crop than in the esophagus. The intima is thrown into a series of irregular folds (Fig. 7). The crop is invested with a circular layer of muscle, but longitudinal muscle fibers were not evident.

The midgut is a thick-walled structure composed of columnar digestive cells and smaller underlying regenerative cells. The intima ends with the proventriculus and is present again in the intestine. Small spherical bodies occurred in the lumen close to or adhering to the digestive cells in all midgut sections. The midgut is surrounded by a circular layer of muscle.

The intestine and rectum are histologically similar to the crop except that the epithelium is reduced. Circular muscle fibers are sparse. Rectal papillae were not detected in the histological preparations, although Gotwald (1971) reported the presence of two flattened, elliptical papillae in the anterior third of the rectum. The Malpighian tubules, whose insertion theoretically marks the beginning of the intestine, are composed of cuboidal cells arranged in a single layer around the lumen. The nuclei of these cells are distinct, and the smooth-walled lumen runs the entire length of each tubule. The Malpighian tubules range in number from 8 to 10 in minor workers, 10 to 15 in media workers, and 11 to 15 in soldiers (Gotwald 1971).

Glands.—There are six paired glands and one unpaired gland in *C. morosus*. The paired glands are the mandibular, maxillary, and pharyngeal in the head, the labial (salivary) and metapleural in the alitrunk, and the poison filaments in the gaster. The Dufour's gland is an unpaired gland in the gaster.

The mandibular glands are situated near the antennal sockets, against the basement membrane of the cranial hypodermis. Each gland is composed of only a few irregularly shaped cells with distinct nuclei. Presumably each cell empties its products into a common duct that terminates at the base of its corresponding mandible.

The maxillary glands are located laterad of the infrabuccal pocket, ventrad of the anterior tentorial arms. Each is composed of numerous pyramidal cells with distinct nuclei, and each cell tapers at one end to form a small duct (Fig. 9). These ducts empty into a larger common duct for each gland, and each of the common ducts opens into its corresponding lateral wall of the infrabuccal pocket.

The pharyngeal glands are located anterior to the