at the anal opening. The hindgut is composed of a short, narrow intestine, the expanded rectum and a constricted posterior end, the anus (fig. 9). The four Malpighian tubules are attached to the most anterior portion of the intestine in the region of the twelfth larval segment. The lumina of the mid and hindguts are not continuous until late in the prepupal or early pupal period of metamorphosis.

Once the foregut is established early in larval development, its morphology remains virtually unchanged throughout larval development. In contrast, the midgut appears to be continually changing in its cytological make-up during late embryonic stages, and throughout larval development. The blind, sac-like midgut epithelium is composed of a single layer of extremely large, flat, polygonal-shaped cells (figs. 8 and 11). Early in larval development these cells have distinct round or oval nuclei surrounded by dense, granular cytoplasm. With age, these nuclei become amoeboid in outline and cytoplasmic changes are evident which result in the histolysis of these cells.

In early stages the hindgut is a relatively narrow tube with columnar-shaped epithelial cells, but with further development, the various regions of the hindgut become differentiated (fig. 9). In some of the large larvae of the fifth nomadic day, as well as in the intermediate and smallest larvae of the seventh and all further nomadic days, the hindgut is fully differentiated into intestine, rectum and anal portions. In larvae of all sizes, in the last stages of larval development, the rectum appears to be contracted, and crystalline material, previously observed in the expanded rectal portion of younger larvae, is now evident in the anal portion of the hindgut.

B. **Malpighian tubules.**—In larvae of all sizes, and at all stages of development, the four Malpighian tubules are symmetrically arranged along the dorsolateral and ventrolateral sides of the midgut as two pairs of straight, narrow tubes. These tubes extend anteriorly from their point of attachment on the anterior, dorso-lateral part of the intestine in the twelfth segment, to the region of the fifth or sixth segment and have a rather uniform diameter throughout. The blind, free ends of these tubules are slightly curved, but in the posterior attached region the two ventral tubules are intimately associated with the anteriorly directed branches of the glandular portion of the labial glands.

The Malpighian tubules are composed of a single layer of epithelial cells, roughly cuboidal in shape, which have distinct, ovoid nuclei surrounded by an irregular, fibrillar arrangement of cytoplasm. The inner, free surfaces of these cells are distinctly convex in the largest larvae of the last statary and third nomadic days, as well as in all larvae of further nomadic days (figs. 13, 14 and 15). However, in the smallest and intermediate larvae of the last statary and third nomadic days these cells are more cuboidal in shape.

Throughout larval development the cells of the Malpighian tubules increase in size and show cytoplasmic variations indicative of the functional activity of this organ. With further differentiation, these nuclei