

Second Instar.

In this instar the form is more variable than in the first; broadly oval to elliptical, usually with a slight incurving on each side of the thoracic region. When oval, the anterior end is the more broadly rounded. The margin is finely crenulate, but there is no thin marginal rim as in the first instar. Immediately after moulting, the body is flat and thin, but before the next moult it becomes well rounded above. Three pairs of marginal spines are present: the first pair on the latero-cephalic region, one on each side; the second pair on caudo-lateral region, one on each side; and the third pair on the caudal margin. These probably represent spines number one, fourteen and sixteen, respectively, of the first instar. The third pair is a little more than one-tenth the length of the body, the second pair is about one-fourth the length of the third pair, and the first pair is even smaller than the second pair and may be difficult to distinguish. There are three pairs of minute dorsal spines: the first pair is on the cephalic region, one on each side of the middle; the second pair is on the first abdominal segment, one on each side; and the third pair is near the vasiform orifice, one on each side, opposite the operculum. These last are somewhat larger than the first and second pairs, which in some specimens may be difficult to distinguish. They are most readily seen immediately after the insect has moulted. A marginal wax secretion is present as in the first instar, appearing shortly after the moult. The segmentation of the abdomen is fairly distinct in the middle, that of the thorax more obscure. The vasiform orifice is relatively farther forward in this instar than in the preceding one. This is indicated by the comparatively greater distance from the apex of the orifice to the caudal margin of the body and by the fact that the spines on the dorsum, near the orifice, now lie opposite the operculum, instead of anterior to it, as in the first instar. The vasiform orifice is of about the same general form as in the first instar. The lingula is spatulate with two pairs of side lobes and one terminal lobe. On each side of the terminal lobe arises a seta or spine about one-half as long as the entire vasiform orifice. Between the two pairs of side lobes on each side a smaller spine arises. The upper surface of the lingula bears longitudinal rows of minute setae, as in the previous instar. When in its natural position, the lingula reaches nearly to the apex of the orifice. The chitinous ridges which bound the orifice laterally do not meet behind, though the intervening space between them is comparatively smaller than in the previous instar. The eyes are