

throughout their further stages. When mature they may be briefly described as follows:

Length about 14 mm.; body dull white; head shining black; thoracic shield widely margined on sides and narrowly posteriorly with black; thoracic legs dull black; prolegs whitish. Tubercles large, flat, but difficult to define on account of the pale colour.

In 1918 the trees were still without leaves at the time the larvæ commenced to appear though here and there, odd buds had burst sufficiently to enable the young caterpillars to obtain a certain amount of food, a majority, however, being obliged to remain without it for some days longer. The spring of 1918, however, had been an abnormally early one and in consequence, induced an early hatching of the larvæ besides causing the leaves to appear before their usual time. Thus the larvæ had already commenced to curl the leaves when the weather suddenly changed from extreme heat to severe cold the effect being to kill the latter and in consequence entirely cut off the insects' food supply. The result was naturally disastrous to the caterpillars and caused a great many to die of starvation. It is possible that the mortality may have been due to cold also, but from the fact that large numbers of larvæ were observed crawling about in search of food afterwards, the evidence indicates that lack of it was the principal cause of death. The threatened devastation of the poplar leaves in 1918 was thus reduced, by the meteorological condition alone, to comparative insignificance though sufficient larvæ survived to provide various local outbreaks the following year.

In 1919, larvæ appeared soon after the poplars began to leaf out and by May 12 had curled 50 per cent. of the leaves on certain clumps of trees. The insects developed very quickly. By May 27 many had become fully mature and were dropping from the trees in large numbers. To observe the falling of the caterpillars when they are about to pupate, is a very interesting incident; the larvæ apparently prepare themselves for the drop by crawling to the edge of their shelter and fastening themselves firmly to the leaf by means of a silken thread. Here they remain until a breeze sweeps through the trees when the shaking causes them to loosen their hold and they come down in a regular shower, the web affording just enough check to prevent a direct fall. As the insects reach the dead herbage the rattle sounds not unlike that of a sudden shower of rain but so quickly the larvæ wriggle out of sight that unless careful watch is kept they are apt to entirely escape detection. These showers of caterpillars may continue intermittently for several hours there being an absolute lull in activity between the gusts of wind, though there is little doubt that they would let themselves down in any case should the weather remain calm. The larvæ at the time they drop, are quite devoid of internal colour matter such as that provided by food, and present a dull white appearance with a brownish head and a small patch of the same colour on the front portion of the sides of the thoracic shield.

Pupation takes place below the dead leaves usually a short distance in the soil. The pupal stage lasts from early June until the following spring, or approximately 10 months.