

twenty days before it emerges to spin its cocoon under some rude protective covering, such as rough bark, cracks, bands, etc. Six days later the larva within the cocoon transforms to a pupa, and two weeks after it has entered the pupal state the moth appears. The average duration of the first generation is about fifty days. In districts where there is but one generation in a year, the larval stage is lengthened to nearly ten months, for the winter is passed as a larva within a cocoon. Where there are two generations the moths emerge in August to deposit eggs on the apple for the second brood of larvæ, which work throughout August and September in the developed fruit. This second brood of "worms" is more destructive than the first, as their ravages are committed on the later and more valuable fruit, often after it has been picked and stored.

From the standpoint of the control of the Codling Moth it is important to know definitely when the moths deposit their eggs, and when these eggs hatch. The observations of many competent entomologists indicate that the egg-laying period may extend over several weeks with both generations of moths.

When we consider the problem of the control of the Codling Moth we must emphasize the importance of these lengthened egg-laying periods, more especially when we bear in mind the habits of the larvæ. It is clear from what has been stated, that the early larvæ may be killed by poisoning the leaves, and by placing poison in the calyx end of the apple; and the second brood may be killed by the spraying of the fruit, for the eggs of this brood are, as a rule, deposited on the fruit.

Experiments carried out both in the East and the West show that a very large percentage of worm-free apples is obtained when two sprayings are made for the first brood of larvæ, and one for the second brood when it is present: the first spraying a few days after the petals fall; the second two or three weeks later; and the third about the middle of August in ordinary seasons. Slingerland lays great emphasis on the first spraying for Eastern conditions, while Simpson is of the opinion that the second spraying is most effective for Western conditions.

A very important factor in successful spraying is the arsenical mixture used. Paris Green has for many years been used successfully by careful sprayers, but with very indifferent results by careless sprayers. If not carefully mixed and agitated Paris Green settles rapidly to the bottom, and much of it will remain at the bottom of the spray barrel when the solution is all sprayed out.