hairs on the upper surface of the hind wing of the male only. The "pencil" is not easily distinguished but is always present. It runs in a furrow, which is ...ticeable from the under side as a slight keel.

Observations made during the past season by Prof. Slinge...nd have demonstrated that the eggs of the codlin moth are not deposited in the calyx ... the fruit, as has been the gener-

The eggs.

ally accepted belief, but are usually laid on the side of the fruit. The eggs are a little smaller than the head of a pin, are flattened and transparent, so that the colour of the apple shows through them. Under the microscope the surface of an egg is seen to be marked with lines, and it looks somewhat like a fish scale. Careful observation in orchards by Prof. Slingerland showed hundreds of eggs, scattered anywhere over the surface of the fruit, sometimes several on one fruit. As observed in the insectary, the worm, which at first was little larger than a hair, was hatched in about ten days time, and remained on the surface of the apple for several hours after emerging from the egg. It then crawled about until the calyx of the fruit was reached, where it worked its way between the lobes and entered the cavity. Here it remained for a number of hours, eating the surface of the calyx lobes, and then gnawed its way into the apple. It will be seen from what has been related, that the practice of spraying the trees with Paris green as soon as the blossoms falls, which has been found effectual by practical growers, is entirely rational. At this time the calyx lobes are open, and the Paris green will be readily deposited in the eye, the fruit being turned upwards, and the poison will be eaten by the larva when it hatches 10 days or so later on. The closing of the calyx is also of advantage, as it covers the eye and prevents the washing out of the Paris green by heavy rains. There are two or more broods of the insect during the season.

Usually the castings from the larva are pushed out through the hole by which it has entered, the passage being enlarged from time to time for this purpose. Some of the castings

Development Stages.

commonly adhere to the apple, hence before the worm is full grown, infested fruit may generally be detected by the mass of reddish-brown exuviæ protruding from the eye. Sometimes as the larva approaches maturity, it eats a passage through the apple at the side, and out of this opening it thrusts its castings, and through it the larva, when full grown, escapes. In three or four weeks from the time of hatching the early brood of larvæ attain full growth, when the occupied apples generally fall prematurely to the ground, sometimes with the worm in them, but more commonly after it has escaped. The larvæ which leave the apple while still on the trees, either crawl down the branches to the trunk of the tree, or let themselves down to the ground by a fine silken thread, which they spin at will. In either case, whether they crawl up or down, the greater portion of them find their way to the trunks of the trees, where, under the rough bark, and in cracks and crevices, they spin their cocoons.

Having selected a suitable hiding-place, the larva constructs a papery-looking, silken cocoon, which is white inside, and disguised on the outside by attaching to the silky threads small fragments of the bark of the tree or other available débris.

After the cocoon is completed, the change of the chrysalis takes place in the early brood in about three days. At first the pupa is of a pale yellow colour, deepening in a day or two to a pale brown. The insect remains in this condition about two weeks, when the moth escapes.

Each moth is capable of laying on an average probably not less than fifty eggs, but these are not all matured at once. By careful dissection they may be found in the body of the moth in different stages of development. Hence they are deposited successively, extending over a period probably of from one to two weeks or more. Add to this the fact that some of the moths are retarded in their development in the spring, and it is easy to account for the finding of larvæ of various sizes at the same time; indeed, sometimes the later specimens from the first brood will not have escaped from the fruit before some of the young larvæ of the second brood make their appearance, the broods thus, as it were, overlapping each other and very much extending the period for the appearance of the winged insects.

The moth conceals itself during the day-time and appears only at night, and since it is not readily attracted by light is seldom seen. The second brood of moths are usually on the wing during the latter half of July, when they pair, and in a few days the female begins to deposit her eggs for the later brood of larvæ, generally selecting for this purpose the later apples. These larvæ mature during the autumn or early winter months. If they escape before the fruit is gathered, they seek some sheltered nook under the loose bark of a tree, or other convenient hiding-place; but if carried with the fruit into the cellar, they may often be