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r three months."*

Another measure of prevention that should be adopted where hops are grown on a large scale, is the removal and destruction of all wild or cultivated plum trees in the immediate neighbourhood of the plantation. This will take away their winter refuge from the insects, and save an infinite amount of trouble.

When the Aphis has made its appearance upon the hop vines, a kerosene emulsion should be at once employed for its destruction. By careful watching and prompt treatment this pest can, no doubt, be kept within bounds, but it must be dealt with without delay, otherwise its extreme prolificness will soon fill the hop-yard with myriads, and render its destruction very laborious and difficult.

THE ONION MAGGOT (*Phorbia ceparum*, Meigen).

This imported European insect is quite common in Canada and the Eastern United States, and often proves very destructive to the onion crop. The attack is made by the larva, or maggot, of a little two-winged fly, which eats into the bulb of the onion and destroys it, partly by its own work, and partly by the decay which results from it.

The accompanying illustration (Fig 40) represents the parent fly magnified, the line below showing the natural size with outspread wings; beneath this the pupa is shown, and below it the maggot; the figure to the right exhibits the maggot devouring the interior of the onion bulb. The fly lays her eggs early in the season on the leaves of the young onion, close to the surface of the ground; from these the young maggots are soon hatched, and penetrate downwards between the leaves to the base of the bulb. Several of them are generally found together; they are yellowish white in colour, tapering from one end to the other, and destitute of legs. When not feeding they generally lie just outside the onion in a cell of wet mud, which is kept damp by the exuding juice of the injured plant; they feed for about a fortnight, and then transform in the earth into brown pupæ, of an oval shape; from these the flies emerge in a fortnight or three weeks, and at once lay their eggs for a second brood. In this case, as the leaves are now high above the bulb, the fly lays her eggs on the bulb itself, or on the ground close to it. At the close of the season, the insect remains for the winter in the pupa state, from which the winged flies come forth in early spring to begin another round of the life of the species. Such, in brief, is the life-history of the insect.

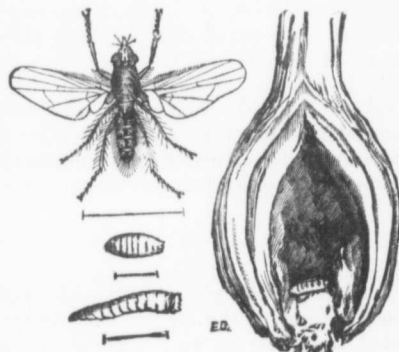


FIG. 40.

The best method of dealing with this insect is to prevent the attack if possible. Two modes of doing this have been tried with success. The first, and most satisfactory plan, is to bury the bulb of the onion so that the fly cannot deposit its eggs upon it. This is done by earthing up the plants as is customary with potatoes and corn. The flies must deposit their eggs somewhere, and prefer to do so on the bulb itself, or very close to it; if this is well covered up with earth the eggs are laid higher up on the plant, or on the ground, and the young larvae, when hatched, are unable to get to their proper feeding place, and consequently perish without doing any injury. Miss Ormerod recommends growing onions in the garden in a trench, prepared in the same way as for celery, and gradually drawing down the earth from the sides as the plants grow, thus keeping the bulb always covered. She found this plan entirely successful in warding off the attacks of the insect.

The second mode of prevention is to scatter about the plants some substance that will be sufficiently obnoxious to the female fly to keep her entirely away from the crop. For this purpose gas-lime has been found most effective. It should be sown broadcast over the bed about once a fortnight, but great care must be taken not to put it on too thickly, as it is extremely caustic, and would seriously injure the plants. Mr. Fletcher

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