

Preventive and remedial measures. It has been found possible by watching carefully, to control an infestation of the Army-worm before the caterpillars leave their native breeding places. This has been done by ploughing around such breeding places a few deep furrows and when the caterpillars collect in the furrows, they can be killed by crushing them, or the vegetation surrounding the breeding places may be sprayed with a strong Paris green, or arsenate of lead, mixture, using one pound of the former, or six pounds of the latter, in every one hundred gallons of water. When the caterpillars are seen marching ahead, however, it will be necessary to plough deep furrows across their path. The sides of the furrows furthest away from the worms should be made perpendicular, if necessary by a spade, so as to render it difficult for them to climb. Along each furrow a series of post holes about a foot deep and about ten feet apart should be made. The caterpillars when they reach the furrow will wander along it and soon fall into one of the holes, when they can then be killed by either crushing them with the blunt end of a post, or fence rail, or by pouring a little coal oil over them. If any of the worms should succeed in getting over the furrow, the plants ahead of them should be sprayed, as above mentioned.

In the autumn following a severe outbreak of the Army-worm in any locality, it is a good practice to burn over the old grass and stubble and then plough deeply. In this way, young hibernating caterpillars will be destroyed and the place rendered unattractive for egg laying for the moths of these and our common species of injurious cutworms.

As with cutworms, promptness and thoroughness of action are most essential in dealing with the Army-worm, if crops are to be saved from its ravages.

THE BLACK ARMY WORM, *Noctua fennica* Tausch.

(Figure 7 on plate.)

Appearance. Full-grown specimens of this caterpillar are from an inch and a half to about an inch and three-quarters in length. The general colour when mature is brown with white lines and dark brown and blackish markings. Down the center of the back is a series of velvety black somewhat diamond-shaped marks one on each body segment excepting the first. On each side of the back is a white line bordered above with black, and just along the lower edge of the spiracles is a wide white band, reddish-brown in the centre. Between this band and the stripe on the side of the back, the colour of the skin is blackish. Before the caterpillars become full-grown they are more of a general velvety black colour, the white stripes being very conspicuous, but as they become mature they are brownish in colour the back being more or less shaded with reddish. The whole body is spotted and streaked with white. The head is yellowish-red, black in front, the field behind the head being black. All the feet are of a pale brownish colour.

The moth, like the caterpillar, is of rather handsome appearance, and with wings spread it measures about an inch and a half across. The front wings are purplish-brown shaded with black and with a more or less purplish shcen; the hind wings are whitish with a few yellowish or dark brownish scales. The reniform or kidney-shaped spot is large and either distinctly yellow, reddish, or yellow and red. The double cross lines are black, excepting the subterminal, near the outer margin, which is whitish. In the males the lower third of the front wings is conspicuously yellowish-brown. The hind wings are pale becoming brown at edge.

Habits and life-history. The habits of the Black Army-worm are very similar to those of our common cutworms; some years, in fact, it is found working in company with the White Cutworm and the Red-backed Cutworm. In years of ordinary occurrence it feeds as do these latter species, but when present in