

## FARM AND FIELD.

## INSECTS INJURIOUS TO GRAIN AND GRASS CROPS.

The Joint-worm (*see Fig. 9*) devotes itself chiefly to barley and rye, occasionally, however, directing its unwelcome attention to oats. Its last appearance on a large scale, in this Province, was in the years 1866 and 1867. Mr. Bethune says of this insect:—

"Its eggs are laid in the month of June, and, like those of the Hessian fly, are deposited about the first or second joint of the grain; the Hessian fly, indeed, having sometimes been mistaken for it. The effect of its work is to raise a gall or exorescence on the stock of the grain, close to the joint, somewhat resembling a joint—hence its name. The insect lives inside this swelling, where its larva work, while the Hessian fly lives in the depression of the outer surface. It attacks the stalk only, not the ear." He adds:—

"The best artificial mode of combatting this insect is either to burn the stubble of the infested grain, cutting high, so as to leave the first and second joints standing, or to cut very close and to burn the straw afterwards. These, however, are dangerous remedies, on account of the risk incurred by the use of fire."

The Anguimois moth (*Butalis cercatella*), with its caterpillar, has been seldom seen, to any injurious extent, for a long period.

The Army worm (*Leucania unipuncta*)—*see Figs. 10 and 11*—has a terrible reputation, and is more common than many suppose, not often in such force as to produce very disastrous results, although it is sufficiently destructive. Mr. Bethune says of it:—

"This insect, so far as its habits are thoroughly known, feeds chiefly upon wild grasses of all kinds, and upon the grass of moist meadows and marshes, at times being excessively abundant. So abundant does it sometimes become in its own locality that, like the chinch bug and the locust of the west, and many other insects, it sets out to find fresh supplies. In order to do this, the insects assemble in very large numbers, and they all seem to go with one accord in a certain direction, as if they were a regularly marshalled army, hence the name 'Army worm.' Of course the stories about their being told off in battalions, etc., are purely mythical. Generally speaking, they do not turn aside for any obstacle; if they come to a fence or a barn, they try to go over it instead of around it. They will stream across roads, and the railway tracks in Long Island, and lately in New Brunswick, have been covered to such an extent as to prevent the movement of the trains, the driving wheels of the locomotive being so greased that they could not bite on the rail, and sand or earth had to be thrown on the rails to enable them to do so."

If the Army worm has up to the present time done no very serious injury to the crops in Ontario, it still must be regarded as an ever-present and possible danger. Mr. Bethune says on this point:—

"We in Ontario have never been visited by

such numbers, but we have had them to a certain extent and they are very destructive. When they appear in numbers the best method of meeting them would be to plough a deep furrow, or dig a trench, in the front of their line of march, with a steep side in the direction in which they are going, and when they are trying to get out of it, to throw straw or shavings or something of the kind and set fire to it, or otherwise to bury them with earth. It is an insect to which we are liable at

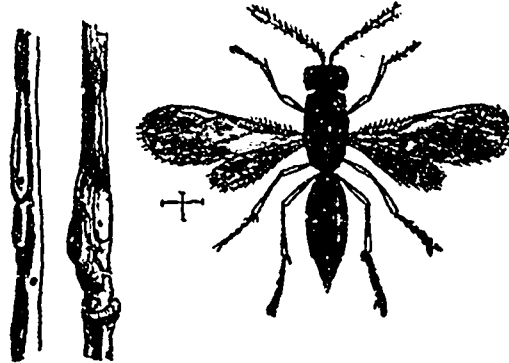
THE JOINT WORM—*Isosoma hordei*.

Fig. 9.

THE ARMY WORM—*Leucania unipuncta*.

Fig. 10.

Fig. 11.

Of which Fig. 10 shows the caterpillar, and Fig. 11 the moth.

THE RED-LEGGED GRASSHOPPER—*Caloptenus femur-rubrum*.

Fig. 12.

THE SEVENTEEN-YEAR LOCUST.

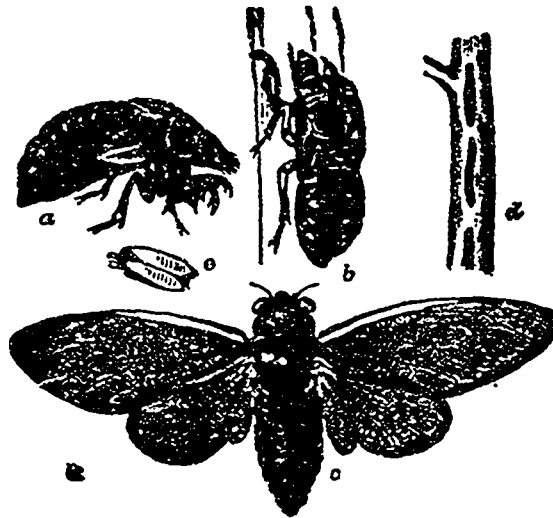


Fig. 13.

Fig. 13 represents different stages in the life history of the 17-year locust. (a) is the pupa; (b) the empty pupa-case after the perfect insect has emerged from it; (c) the perfect or winged insect; (d) the perforations in a twig for the deposit of eggs; (e) the egg.

any time, and any sort of vegetation, whether grain crops or anything else, is food for it. It is a very common insect, and I suppose all our gardens have a few specimens at all times, but it does not propagate very rapidly in our climate, though if the checks upon it were removed, it would increase enormously in numbers."

Poultry, wild birds of some species, and several parasites and friendly insects keep it in check.

"The Wire worm (*Agriotes mancus*)," says Mr. Bethune, "is sometimes troublesome to wheat. This insect lives altogether out of sight, under ground, and hence it is not much observed by the farmer. It is a long slender grub, with six legs

under the anterior portion of the body, usually of an orange-yellow or tawny colour, and is very hard, unlike our caterpillars, which are soft to the touch, consequently receiving its name, the 'Wire worm.' It feeds under ground upon the roots of vegetation, and is looked upon in England as one of the very worst foes of wheat. In Ontario, we have not been able to estimate its ravages as resulting in any great loss, though this may be because they are carried on out of sight. It is frequently observed in ploughing."

The wire worm, however, does not cease to be troublesome when it quits its larval state, and appears in the shape of the spring-back beetle.

"The perfect creature," says Mr. Bethune, "is very familiar; it flies into the house at night, attracted by the light, and may be found creeping about sap exuding from trees, ripe fruit, or anything sweet."

He recommends employing children to follow the plough and pick up the wire worm, or to turn turkeys and ducks into the ploughed fields, as remedies for the too great numbers of this creature.

The larva of another very familiar insect, popularly known as daddy long-legs (*Tipula*), is more injurious to timothy and ordinary grasses than to grain.

"Its larva," says Mr. Bethune, "is a grayish, dirty-coloured caterpillar that feeds upon grain, and vegetation of a similar kind. It has the faculty of surviving intense cold. Some years ago specimens were sent me that were gathered at the close of the winter in a field near Cobourg; they seemed to be perfectly hard frozen, and apparently as brittle as little sticks, but on the application of warmth, they became quite lively and prepared to feed. It attacks the roots of the plant, and meadows and lawns are often seriously injured by its ravages."

The Province of Ontario has never been afflicted by a visitation from the Rocky Mountain locusts (*Caloptenus spretus*), although, in other parts of the Dominion, that calamity has been experienced. The history of this pest and its migrations is interesting, but as, for reasons given in the evidence, there appears to be no reason to dread it in this Province, it will be sufficient briefly to notice Mr. Bethune's description of its habits. He says:

"The life history of this insect in a few words is as follows:—They are hatched out in the plains in countless numbers, eat up everything before them, and consequently become destitute; instinct compels them to move on, just as in the

case of the army worm, and being winged insects, they fly up into the air to a considerable height, and are then borne along by the wind, alighting when they reach a country covered with vegetation.

"Not being able to fly against the wind, their flight during the latter part of summer has been found to be invariably from the north and north-west towards the east, this being the direction of the then prevailing winds. They then deposit their eggs, from which are hatched out next spring, new insects. In the spring the prevailing winds are in an opposite direction, and the new insects, having obtained their wings, are carried back towards their original haunts,