



THE MEAT-MAKING CROPS.

Some Insect Enemies of Field Crops During 1907

The remarkably abnormal season of 1907, not only affected to a marked degree the development of all kinds of crops, but also influenced very decidedly the numbers of injurious insects. On the whole it may be said that the losses from insects were not as severe during 1907 as is usually the case. On the other hand, the increase of various kinds of parasitic insects, which do so much to control those which attack many of our crops, was checked by the cool dull weather which prevailed throughout the season.

CEREAL CROPS.

Although there were reports of injury by Hessian Fly in Manitoba, no instance could be found where this insect was actually at work; but there was some injury, as is always the case, by THE GREATER WHEAT-STEM MAGGOT, (*Meromyza*). This is a native insect which feeds naturally upon many of the prairie grasses and frequently transfers its attentions to the crops of growing wheat. Its presence may be detected by the ears of the many stems turning white just before wheat ripens. Upon examining these stems they will be found to have been eaten off just above the top joint, deep down inside the sheath, by slender transparent green maggots a quarter of an inch long. From these there appear about the end of July or in August, active slender greenish flies, one-fifth of an inch in length, with shining green eyes and with three dark stripes down the back. The hind thighs are conspicuously thickened. There are at least two regular broods of this insect in Canada, the summer brood attacking the stems of growing wheat, barley, and grasses, and the autumn brood feeding in the rootshoots of grasses in the West and in the young fall wheat in the East. This destructive little insect has a very wide range and is abundant from the Atlantic Coast to the Rocky Mountains.

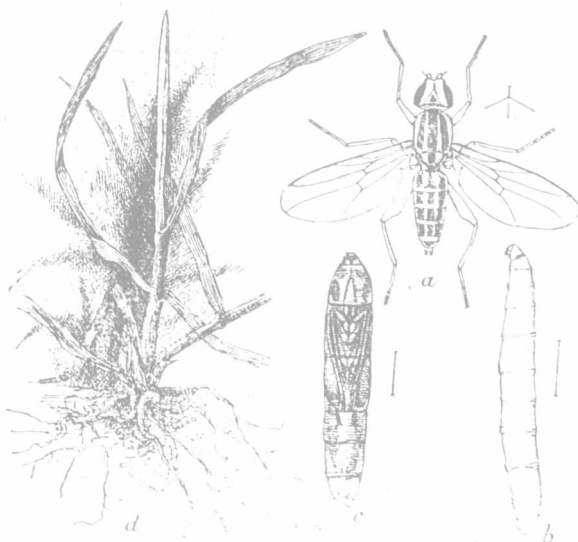
Remedies. The collection and destruction of the stems showing the prematurely ripe heads or "silver tops," each of which contains a single

insect, will have some effect in reducing the numbers; but this is seldom a practical remedy in the large fields of the West. When the flies begin to emerge late in July and early in August, the egg-laying females may be induced to lay in strips of wheat or barley sown late as traps, near the infested fields. The young plants will be more attractive than the wild grasses at that season. These strips must be plowed down late in August so as to destroy the half-grown maggots.

WESTERN WHEAT-STEM-SAWFLY (*Cephus occidentalis*). In parts of Manitoba there has been considerable loss in wheat fields from the attacks of the larvæ of one of the native sawflies. The natural food plant is a coarse prairie grass known as Awned Wheat Grass (*Agropyron caninum*); but in certain years an appreciable injury is done to wheat crops, particularly around the edges of the fields. The flies emerge about the beginning

of July from cells made by the larvæ, the previous autumn, below the surface of the ground in the lower part of the stems in which they had fed during the summer. The eggs are inserted by the female saw-fly into the green stem of the growing wheat, never more than one in each stem. The larva or grub passes the whole of its life inside the straw, feeding upon the inner surface. Before winter sets in it has worked its way down to the base. It is then full grown and ready to spin its cocoon, in which it will pass the winter. Before doing this it gnaws almost through the straw just above the ground, so that at a slight touch the stem breaks off, leaving the larva in the stubble. When full-grown this larva is about half an inch in length, white in color, with a rounded yellowish head. The perfect flies are shining black, about one-third of an inch long, banded and spotted with yellow, and have four wings. This insect was probably the most destructive enemy of the wheat grower in central Manitoba in 1907. Mr. Norman Criddle, of Aweme, Man., estimates the loss as 50 per cent. of the plants around the edges of some fields, running in for a distance sometimes of 100 feet, and occasional injured stems showing throughout the crop.

Remedies. I was formerly under the impression from the material which had come into my hands, from time to time, that the burning over of stubble in autumn or spring would destroy most of the overwintering larvæ, but from careful observations made by Mr. Criddle during the past autumn it would appear that the larvæ almost invariably bore down into the very base of the stem about an inch and a half below the surface of the soil. This fact, as Mr. Criddle points out to me, would render stubble burning useless as a remedy. Deep ploughing after the crop is cut or before the flies emerge at the end of the following June, would seem to be the best means of treating a field which was known to have been infested. All stubble fields left for summer-fallowing should be ploughed down deeply early in June. By ploughing the cocoons



THE GREATER WHEAT-STEM MAGGOT.