

APPENDIX No. 1

fall sown wheat and also in wild grasses. It is in the root-shoots that the maggots which attack the root shoots of spring sown grain, and the maggots of the third brood which attack the fall sown wheat, do the most injury, and therefore one of the best remedial measures which can be devised with regard to this insect, and which the late Dr. Fletcher suggested, is to postpone the sowing of fall wheat. If you postpone it until after the third week in September you miss the flies of this other brood.

By Mr. Sproule:

Q. Then you would miss your crop next year?

A. Not necessarily; it is a question for you to consider. I think it is found that by sowing at the end of September you do not get quite as good a crop although you may not get so heavy a crop as you might have obtained by sowing earlier. At the same time, if the early sown crop is liable to be attacked by the maggot you would probably get a larger crop by postponing the sowing than you would by sowing earlier and having it reduced by the attacks of the maggots. Another method of control is the destruction of the volunteer wheat, either by ploughing or harrowing with a disc harrow. By destroying the volunteer crop you destroy the maggots from the summer brood and this terminates the annual life history of the insect.

By Mr. Chisholm (Huron):

Q. How would that do in Alberta where they sow the fall wheat very early—some time in July?

A. In Alberta the insect may probably only have two broods in the year. The number of broods depends considerably upon climatic conditions. Where spring wheat is sown it is found that turning over the stubble is a very good measure to adopt because you may get a number of insects which are in that stubble destroyed. But this insect is extremely difficult to attack on account of its habit of living in wild grasses. It is one of those insects of which I was telling you at the last meeting, which are native to the country and whose native foods are the wild grasses. When man interferes with nature and cultivates the land and sows cereals then this insect devotes its attention to these. At the same time it retains its habit of feeding on wild grasses which makes it, therefore, a very difficult insect to control.

There is also the lesser wheat-stem maggot (*Oscinis carbonaria*, Loren.) which sometimes proves troublesome and is treated in much the same manner.

THE HESSIAN FLY.

In the case which is being passed around you also see specimens of that very great pest the Hessian Fly (*Cecidomyia destructor*, Say.) In insects which attack crops one cannot omit this very important enemy of cereal crops, the hessian fly. It was probably introduced towards the end of the 18th century and it may be interesting to you to learn how it received its name. It was supposed to have been introduced by the Hessian mercenaries who were employed during the war of the American revolution, I think about 1778, and who were quartered in Long Island, New York. The Hessian soldiers were supposed to have brought the Hessian fly with them across the ocean in their straw; it is certainly a European pest. It has been found very destructive to spring wheat in Manitoba, and also to spring and fall wheat in Ontario and the Eastern Provinces. There are usually two broods, but in Manitoba there is only one annual brood. In the case of the form having two broods the life history is as follows: The small black flies, with smoky wings such as you see in the case, are about a quarter of an inch long; they emerge in May or June and lay their eggs on the ribbed leaves of the wheat, barley or rye, whichever crop they are attacking. You will find the eggs deposited in small rows on these leaves. The larvæ hatch and work their way down