

autumn, the earliest sown plants being the most subject to the pest. The fly deposits its eggs on the blade of the wheat plant, and when the young are hatched, in the shape of a whitish maggot, it eats its way at the junction of the leaf into the sap vessels of the stem, which, when too much affected, destroys the old plant before the winter. Often half the plant is affected, and the other half free; sometimes only a few of the stems are affected, in which case the mischief done is small. The maggots proceed with their work until they are prepared to go into their chrysalis state; they then assume the appearance of a flax seed, and either bury themselves in the earth or remain attached to the stem of the wheat, close to the lower joint, until the spring, when they turn into the fly, which again lay eggs on the wheat stem and leaves, and go through the same transformations, coming out as a fly ready for the new sown autumn crop. Hence the Hessian fly affords two crops of insects each year. The worms do not actually eat into the straw or stem, but appear to live by suction, and the straw gradually depresses and wastes away, until it finally perishes, or breaks off with the wind or weight of the ears. Comparatively late sowing is the preventive, but the only cure is sowing a kind of wheat which is not liable to be affected, and of which there are more than one.

In Canada, if we sow before the first of September, we are subject to the Hessian fly; if we sow later than the end of the first week in September, we are very subject to rust. This will be thought very early in England, but it must be borne in mind that our winter sets in, in full force, in November.

The Hessian fly is now not dreaded in Canada; it seems to have brought its own destroyer with it, which keeps it in check, and it now only occasionally takes a percentage of the crop.

THE MIDGE.

The wheat midge, or, rather, midges (for there are two of them—*Cecidomyia tritici* and *Cecidomyia cerealis*, Fitch, which are generally spoken of as "the midge," without distinguishing the species, they being very much alike), is a totally different insect from the Hessian fly. The insect in its fly state, makes its appearance from the 13th to the 20th of June according to climate, and is then seen in countless myriads. It attacks the new ears of wheat, piercing the outer husk or chaff, and depositing its small yellow eggs through the hole which it has made with its ovipositor. The insect most common is very small, has a bright orange body, the end of which is armed with its ovipositor; and it is through this that the eggs pass into the chlosts of the wheat ear. If the wheat is in flower at the time the eggs are deposited, the worms as soon as they have life (which seems almost immediately), work down to the bottom of the case which is to contain the future grain of wheat; they attach themselves to the growing end of the flower, and gradually absorb all the juices which pass from the stem, and which should form the future grain. The result is the yellow maggots called in your paper "red gum," and no wheat. If the grain is only just forming when the midge worm gets to it, it can still by suction or otherwise exist upon it, and destroy the grain; but, if when the insect pierces the ear the grain is already formed, and has attained a certain shape and strength, say one-third or

half grown, the midge worm is powerless, and finally starved, although it seems to obtain some nourishment, and will often leave an indentation in the grain, showing its presence. Often all the lower grains in the ear will be safe, and the upper ones will be destroyed; but if the entire ear is in a favorable state for the insect, it makes a clean sweep of it, and destroys every grain. As soon as it has run its course of destructiveness it appears as a little fat yellow maggot, which wriggles up out of the ear and falls upon the earth, into which it sinks for its winter habitation, or it is carried into the barn with the grain and is threshed out with it; going out with the straw, and coming out as a fly in due season. Thus it will be seen that this insect differs entirely from the Hessian fly in every respect; it only comes once in the year, never commences its ravages till June, and ceases with the ripening of the wheat.

It is, however, the most destructive pest known here; our fields may on the 10th of June promise 40 bushels per acre, and in two weeks we may ascertain the total loss of the crop, which often does not give back the seed. Our fine white wheat is the most subject to it, and so absolutely is it a question of a few days and season, that the whole of a field may be free except the wet spots, which by wet or dampness are a few days later than the rest of the crop; all these wet spots will be entirely destroyed. On the other hand the great body of a field which lies wet may be entirely destroyed, whilst a few dry knolls in it may be as entirely free.

Our course of husbandry has greatly tended to produce this curse to our country. Owing to various causes, to which it is not necessary further to allude, we seed down our fall wheat with clover, consequently all the midge worms which have fallen on the ground at harvest come forth in June amongst the clover, and go off to the nearest wheat field. In the June evenings, when the midge flies take wing, the air is full of them, and they spread in every direction.

It is only when the wheat stubbles are ploughed and fallowed, or sown to green crops, that the number of midge worms, or chrysalides, can be appreciated (the chrysalis is just like the worm, and remains in the shape of a yellow maggot.) In cultivating wheat stubbles the following spring and summer, these little yellow bodies are often in such numbers as to run down into the harrow tracks, and look like yellow sand—the land seems alive with them.

The midge came into this province in three directions; it travelled about 9 miles each season, at first devastating the greater part of the wheat crop. We knew nothing about it, and many districts gave up growing wheat altogether. Now, however, our experience has taught us that if we can get the wheat very early, there is a good chance of missing the midge, or if we can get it very late we are also secure; but from the Scylla of the midge we then fall into the Charybdis of rust, which is as fatal. If we could get late fall wheat not subject to rust, our fortunes would be made.

We have now several kinds of fall wheat which are called "midge proof," and these are now coming into general cultivation.

EFFECTS ON SPRING WHEAT.

The midge attacks spring wheat as badly as fall wheat, if it comes into flower in the right season. We, therefore, sow our spring

wheat very late, often as late as the 1st June, but generally about the 10th May; and as we have a kind, called "Fyfe" or "Fife" wheat (so called from its introducer), which does not rust, the spring wheat becomes a tolerably sure crop. This year all the early sown spring wheat is entirely destroyed, while the late sown is a good crop. Our fall wheat this year is also a good crop, particularly the "midge proof." The midge also sometimes attacks the barley, and is quite destructive, spoiling the sample; but as the worm, although it can live on, and in the substance of the grain, never can get out, or come to perfection as a fly, it does not help to increase.

The only known cure for the midge is ploughing with the Michigan plough; this consists of two turn furrows, one of which, like an English skim coulter, takes off about two inches of the surface, including the weeds and stubble, and deposits it in the bottom of the furrow, while the second, or main turn furrow, raises the second portion of the land slice, and deposits it over the first portion, thus entirely burying it to a depth of several inches. If this is not again turned up till the following year, or out of season for the midge, the insect is destroyed. But the course of Canadian agriculture, and the extraordinary ignorance and prejudice of the great body of our farmers, renders it impossible to carry out this, or any other system generally; and we, therefore, resort to the other measure before mentioned.

You speak of the midge as increasing in England; when the subject is once understood the cure is half effected, and I trust that this information, which is the result of actual experience, may be useful. *Vectis.*

SHORT HORNS.

Our readers are always glad to hear of the welfare and progress of the thoroughly-bred animals imported from time to time by the Board of Agriculture. It gives us pleasure to insert the following notice, and we shall feel obliged if other owners of Short Horn or other pure stock in the Province will keep us informed from time to time of their doings:—

"Agnes" is doing very well, but is troubled with lice. She is not a great milker, but her milk is good and rich. Her calf, "Charles the First," (as I have named him) was sired by "Sir William," belonging to our Society, and is nearly six months old. He has had no extra feed, but well cared for. I weighed him to-day, and he weighed 400 lbs., and girths four feet one inch. I should call him a good animal; is nicely marked red with white spots. I shall offer him for sale to-day at \$35, as I am selling off my farm stock.

I have a heifer calf out of a cross of Durham and Ayrshire, after "Sir William," a perfect beauty. I intend raising it. "Sir William" is getting some fine stock.

C. C. HAMILTON.

LEICESTERS.

We learn from the Hon. R. A. McHef-fey that the splendid Ewe which gained the first prize in the Certified Pedigree Class at the Provincial Exhibition dropped