

wire-worms will come. And so we see that by knowing the life history of these things we get a double shot at them. We kill the worm, and we also know its parent, the "click" beetle, and kill it.

Among the *sucking* insects are various kinds of lice. They have only long beaks, for sucking, but no jaws. We find them on animals and plants, and as they get their food by sinking their beaks (which are as sharp as a very fine needle) through the surface, any amount of poison on the surface will not kill them, so the way to attack them is by something that will stop up their breathing organs and suffocate them, *e.g.*, coal oil emulsion, tobacco decoction or smoke. And so there are many other insects which we soon learn to recognize as foes, and by knowing their habits and how and when they breed, we can learn how to deal with them. There are foes all around, grubs eating our poplar and other trees, our fence posts, spruce trees, etc.

To come now to our insect friends. We have many among our ordinary beetles, and whenever we recognise any of our friends among them we should be careful not to destroy them. In our gardens and fields there is a beetle called the "fiery" beetle, which has six rows of bright bronze spots on each wing cover. This insect in two of its stages (grub and beetle) feeds on the cutworm and wireworm. It attacks the cutworm so eagerly that it is often called the "cut worm lion beetle." [Specimen of *Calosoma calidum*, Fab., handed round]. Then there is a smaller beetle (black) called the "ground beetle," which also feeds on cutworms, etc. [Specimen of *Harpalus caliginosus*, Fab., handed round]. The "tiger" beetle is also a great friend of ours in that way. [Example of *Oicindela vulgaris*, Say, handed round]. And the familiar little "lady-bird" (of which there are several varieties) lives on nothing else but our insect foes. Its "grub" devours wholesale the young plant lice and the young of turnips and potato bugs. Wasps, too, are among our insect friends and all "dragon flies." Besides these and many other of our friends which we can see every day, there is a host of minute flies, whose grubs feed upon our enemies and should not be recklessly destroyed.

A good general agricultural remedy is summer fallowing, as it starves the insects, and exposes them to birds, etc. You might try a small patch next year, and see the effect. Then late fall plowing will turn up to the frost and so destroy hundreds of wireworms and other grubs. We have also many friends among our common birds, such as jays, crows, and all sorts of wood-peckers. Wood-peckers never attack a tree, either dead or alive, unless there are grubs first eating the tree, and it is to get at these that they peck the trees at all. Their long tongue works into all the cracks of bark, etc. And this year there has been an unusual number of toads. Toads do no harm and feed almost entirely upon insects, and should be carefully protected accordingly.

Among our enemies too is "smut," though this is really a fungus. This is a fungus on grains, and, while always a pest, is rather more prevalent this wet year than usual. The bad features of "smut" are that it lowers the standard of purity in the flour, and it takes away from the profit of the crop. A deduction of 8 p.c. is a fair estimate of the loss from smut alone to the farmer, and the worst of it is a "smutty" plant does not thin out the stand and give the healthy plants more light and soil. It takes up just as much room, and requires as much nourishment and moisture from the soil as do the healthy ones. One single germ of smut coming in contact with a healthy grain will infect it, and smut germs are easily blown about by the wind, or carried from field to field by threshing machines.*

It often seems strange that there should be in the ground so many cutworms and other grubs, but this would not be the case if the land were kept perfectly clear of weeds. Weeds, such as Lamb's quarter, are their natural food, and where these grow the insects naturally go in order to lay their eggs, which hatch into the grubs.

*NOTE—In answer to several enquiries at the meeting as to the remedies to prevent smut, I gave the general formula advised by Dr. Fletcher in ordinary cases, viz.: Dissolve 1 lb. of bluestone in a quart of hot water, which is then sprinkled by one person over 10 bushels of wheat or barley, placed in a wagon-box, whilst some one else keeps the grain well stirred. Oats should be submerged, not sprinkled only.

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