

vigorous, healthy growth is promoted. Frequently, even after a severe attack has begun, by putting on some quick-acting manure, the crop is picked up and forced on past the period when it is likely to be injured by insect pests. Mr. William Miller tells me he has been most successful with high culture, and thinks that by its means he can clear his orchards of the Oyster-shell Bark-louse, and his fields from the Wire-worm, in about three seasons.

A most necessary part of good agriculture which affects this subject, is a comprehension of the principles regulating the rotation of crops, by means of which any insect attracted to a locality by a certain crop being grown there, will not have the same plant to feed upon the next year.

It sometimes becomes necessary to change the time of planting a crop, so as to present it to its insect enemies at their regular time of appearing in a condition in which it cannot be injured, or even to give up the cultivation of a certain crop for a length of time altogether, so as to starve the insects out. For this latter remedy to be successful, great care must be taken to have all hedges, rubbish-heaps and fences kept clear from weeds and litter.

Occasionally the planting of a small strip of a more attractive food-plant, round the outside of a field, has had the effect of drawing off insects from the main crop.

Amongst the active preventives are embraced all such methods as placing mechanical contrivances on trees to prevent the ascent of the female insects, as the Canker-worm moths which leaving the ground in autumn and spring ascend the trunks of trees and lay their eggs on the bark.

Traps in the shape of bands of straw may be used for catching the caterpillars of the Codling Moth when they are seeking a place to complete their transformations.

Peach trees may be protected against the borer by mounding the earth up round the roots; and the Flat-headed and Round-headed borers of the apple may be prevented from laying their eggs on apple trees by washing the trunks during June with an alkaline wash, made as follows: Make a cold saturated solution of washing soda with soft soap, until the soap is reduced to the consistency of paint. Apply during dry weather, and it will form a coating over the trunks of the tree not easily washed off by rain.

There is one more principle we work upon, namely, the fact that insects are either attracted or repelled by certain odours. You will have observed that the small maggot, which works such destruction by boring in the stems of young cabbages when they are first set out, seldom attacks them in the seed-bed; but immediately after they are set out they suffer severely. This is due to the fact that in the operation of transplanting, many of the root-fibres are broken, and the plants to some extent bruised. On this account more of the characteristic odour of the plant is emitted than when left undisturbed. This, added to the fact that the plant is checked in its growth by its removal, leaves it in a less vigorous state to withstand insect attacks. The most successful treatment, in my experience, has been to place some strongly odorous substance round the young plants immediately they are planted out. For this purpose gas-lime is the best; but as the supply of this is limited, sand saturated with petroleum may be used. Take a pailful of dry sand and pour into it a teacupful of petroleum. Mix all well together, until the sand is thoroughly permeated with the odour of the petroleum, then put a good spoonful round each young plant, not quite touching the stem. Where fresh gas-lime can be obtained it is a far better protection, but must not be allowed to touch the plant, because until it has been exposed to the air for some months it is very caustic, and will kill all plants or insects with which it comes in contact. A ring, about 2 inches from the young plants, I have found a perfect protection. The advantage of this substance, too, is that after exposure to the air for some time its caustic principle, sulphite of lime, is converted into the harmless sulphate of lime or plaster, a well-known and useful manure.

I have now, gentlemen, given you what may be called some of the first elements of Economic Entomology. I trust that some of you who had not, previous to this time, paid much attention to the matter, may be induced to do so in the future, and I

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