

absence of bees the clover plant never perfects its seeds, and being thus unable to reproduce itself the economic value of the crop is greatly minimised if not superseded entirely. It is thus seen that in the propagation of some plants, insects are absolutely necessary as a medium for cross-fertilisation. In the case of most flowering plants the value of insects is a value of degree rather than of absolute necessity, cross-fertilisation being generally essential to a healthy, vigorous growth. It is true that insects have not the entire monopoly of the pollen trade, but the other agencies are comparatively insignificant.

It will be seen that insects in their correlation with plants are, in general, friends of the farmer, and in most cases deserve protection at his hands. On the other hand a great many whose noxious habits stamp them as enemies, call for a treatment which will as far as possible reduce their number or exterminate them altogether. It is in this war of extermination that a knowledge of the characteristics of the various orders asserts its value. The treatment necessary for the destruction of some insects will prove to be ineffectual in the case of others, and it is safe to say that, through ignorance of the peculiarities of some insects, millions of dollars have been wasted in trying to cope with them. Science has however, of late years, very thoroughly investigated the insect problem, and the remedies proposed as a result of those researches, have proved to be generally effectual, being based on a proper conception of the insects against which they are directed.

It only remains then for the man who is willing to profit by the investigations of others, to apply those remedies which have proved successful, but it is the duty of every farmer to study the subject himself, to some extent at least, and thus be able to contribute to the sciences from which he is so willing to draw. The plea, of a want of time to devote to such things, will no longer hold as a valid excuse, for every man has time to do that, which will result in the greatest remuneration or prevent the greatest loss, and truly, when we begin to count the cost of past depredations, no subject can present greater claims for consideration. It is estimated that in 1891 the crops of America were damaged by insects to the extent of about three hundred and eighty million dollars, and in 1857, in our own country alone, the damage done by a single species, the Wheat Midge, is placed at eight million dollars. These figures only suggest losses that have occurred year after year, and which might have been to a great extent prevented if the attacks of the intruders had been properly met.

In these times of commercial activity, insects find an easy medium for migration, and as a result new insects are continually appearing within our territories. By becoming familiar with the different types of insects, and studying their habits, we would be able on the arrival of a new species, to identify it as either a friend or a foe, and if the latter, immediate steps could be taken to repel the invader. A great deal of time and money might thus, often be saved, if we were able to detect the advent of pernicious insects, as they could then be quite easily prevented from getting a foothold in the country.

Not only do the crops of the farm suffer greatly from those troublesome little creatures, but the live stock are also victims of their obnoxious habits. Millions of dollars will not cover the loss to the herds of America, incurred by the ravages of the recently introduced Horn fly, and the annoying effects on the farm-stock of a few

of the commoner parasites, is too well known to need further comment.

We have only hinted at a few of the ways that these seemingly insignificant creatures assert their importance. Other phases of the subject might be presented if space would permit, but it may be easily seen, that it has not in the past received the attention it deserves, and that present conditions demand for it a closer study with a view of ascertaining the best means of coping with our enemies in the insect world. With regard to a practical application of those means, it would be well if farmers could instigate a system of co-operation, for in this business as in that of weed-eradication, there is little inducement for a man to endeavour to thoroughly clean his own farm when he knows that each succeeding year will bring him new enemies from his neighbour's field.

J. W. W.

Maple Essence.

The chemical department has been searching maple syrup for the peculiar essence which gives the characteristic odor and taste which distinguish maple from cane and beet sugar. The material is found to be a yellowish oil in fresh maple syrup, becoming a waxy solid in maple sugar and probably in maple syrup after being exposed to air. This maple ether soon changes by exposure to air. When first prepared it has a most agreeable odor, and reminds one very strongly of the odor of fresh maple syrup. The fact that it rapidly deteriorates by exposure to the air is a satisfactory explanation why maple syrup must be kept from the air in tight cans or jars to preserve the rich maple taste. Syrup deprived of this ether is found to have nearly the odor and taste of cane sugar.—*The Speculum, Mich. Agricultural College.*

Royalty Against Tobacco.

A pamphlet written by James I. of England, has this closing sentence on the filthiness of the use of tobacco:

A custom loathsome to the eye, hatefull to the Nose, harmful to the braine, dangerous to the Lungs, and in the blacke stinking fume thereof, nearest resembling the horrible Stigian smoke of the pit that is bottomlesse.—*The National Temperance Advocate.*

President Harper, of the University of Chicago, gives the average salary of the college president as \$3,047, of the college professor as \$2,015, and of the instructor as \$1,470.

An item is going the rounds of the press to the effect that whiskey is now manufactured out of old rags. We see nothing remarkable about this. Every one knows that nearly all the old rags now in this country are manufactured out of whiskey, and there is no apparent reason why the process of conversion may not work as well one way as another; from whiskey to rags, and from rags to whiskey. What a beautiful business it is!