ECONOMIC ENTOMOLOGY AND BOTANY.

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lestroying the the insect for ying some corer, leads us to nt. Apiarists

claim that fruit-growers have been spraying their trees whilst in bossom and that their bees have been poisoned by gathering the poisoned nectar. Of course the practice of spraying trees while in blossom is quite wrong, and should be stopped with a firm hand for all considerations. The horticulturist is liable to injure his fruit directly, and if it be true that the bees are poisoned, he not only injures the bee-keepers, but also destroys his best friends. Bees are known to perform such an important part in the fertilization of many flowers that advanced fruit-growers keep bees in their orclards for that very purpose. We all know that the quantity of blossom on fruit trees in the spring cannot be taken as an index of the quantity of the crop that will be reaped, unless there be at that time sunny weather, so that the bees and other insects muy visit the flowers and fertilize them. Botanists have discovered that it is far more advantageous for flowers of a plant to be fertilized by pollen taken from other flowers, and this is carried so far that nature herself provides, in many flowers, means by which fertilization by their own pollen is impossible. In some plants we find separate male and female flowers; these may be either on different plants altogether or upon different branches of the same plant, Again, in cases where the flowers are perfect, and contain both male and female organs, we find that these may mature at different times, so that when the female organ, the pistil, is ready to receive the fertilizing pollen, the anthers of its own flower may have already shed their pollen, or vice versa. Charles Darwin, the great physiologist, summed up his observations on this subject in the trite generalization that "nature ubbors self-fertilization."

Although in some cases self-fertilization may be possible, it is not so in all, and it is probably better in all plants that the pistil be fertilized by pollen from other plants. Now, with regard to bees being poisoned by gathering honey from flowers which have been sprayed with Paris green : although I do not know of any actual experiments having been tried, from what I have lately read on the matter, I think that it is quite possible that they can be poisoned, and if so, we may just as well recognize it at once. Sometimes enthusiasts go too far-some saying that it cannot be done, whilst others say it can. What we want, however, are facts ascertained by careful obsorvations. Bee-keepers claim that they know of actual instances, when bee-hives have been located near orchards which have been sprayed during the time that the trees were in flower, and that the bees have been found poisoned. A writer in a late number of the American Bee Journal claimed that the Paris green could be plainly seen in the bees' bodies. This last statement, however, I think must surely have been an exaggeration, although it is probably the case that they may have been poisoned either by the nectar or by drinking water from the sprayed leaves. It was also claimed that the honey stored away in the comb was poisonous; but this last statement will require far more proof than has as yet been brought forward.

Honey, as it occurs in the comb, is an altogether different thing from the nectar of flowers. Before it becomes honey it has to be partially digested by bees, and is not honey at all when in the flowers. The bees suck up the nectar and elaborate it into honey. I am under the impression that before they could turn poisoned nectar into honey they would be killed by the poison. Another safeguard is this: at the time fruit trees are in flower, although the bees might be poisoned, if some careless fruit-grower were to spray at that time, it would be very unlikely that poison would get into the honey we eat. The honey stored away in the honeycomb is only the surplus. At the time when spraying is done, early in the season, bee keepers tell me that the bees used the honey they collect then almost entirely as food for their brood, and the honey we steal from them afterwards is only the food which they have laid up for themselves for useduring the winter; or, in other words, there is no surplus honey, apiarists say, at the time of the year when fruit trees are in flower. I believe that bees have been found, and Prof. Cook, of Michigan, a high authority on bees, states that larvæ have been found poisoned through partaking of this poisonous food. This is the whole thing, and the question came up for discussion the other day before a committee of the Ontario Legislature, when I was asked by the provincial Minister of Agriculture to go to Toronto and give evidence before the committee. The question that was put to me

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