

The Effect Spraying Has on Bees.

—R. F. Holtermann.

The relationship between the bee-keeping and fruit-growing industry through the work of cross fertilization by the honey bee is at present so well recognized that it is not necessary to more than say that anything which injures the bee prevents her from doing this important work. To spray fruit trees when not in blossom does not interfere with the honey bee. To spray during fruit blossom, when the latter are secreting nectar for the purpose of attracting the insect and distributing pollen when rifling it of its nectar, is very injurious to the honey-bee.

The honey bee has a very highly developed nervous system, and for that reason, considering its size, falls an easy prey to quantities of poison which could have no effect upon other insects of a similar size. And the quantity of poison which would be fatal to the honey bee would have to be multiplied many times to have upon larger animals even the effect of a mild tonic, as prescribed by physicians.

The way in which the poison reaches the bee is as follows:—Attracted by the odor of the blossom she goes long distances from the hive; as she nears the flower she locates it, depending more upon her eye as the guide, and enters it, rifling it of its nectar. The nectar through the spraying mixture has a very small percentage of the poison. This mixture is taken up by the bee and enters the honey sac—not the true stomach. I do not know if the effect upon the honey bee varies according to the percentage of poison or depends upon the question as to whether the honey bee allows a portion of the nectar to enter the true stomach for its own support. It appears to me likely that in either case the bee may perish. The result, however, is this: In many cases, bees perish at the tree, in others, on their way to the hive, and still others, lose their lives after returning to the hive. This is not all. The honey bee undergoes all the stages of a true insect, namely, the egg, the larva, the pupa, and lastly the imago, or perfect insect. During the larva stage, it is fed pollen and honey by the mature insect; this food containing only a very minute percentage of the poison is much more fatal to the bee when in the larva or grub stage, and in this way many partially developed bees are destroyed.

The loss then is two-fold, or to use a

well-known term, the candle is burned at both ends. The old bees are destroyed, and so are the embryo bees, which should go to take the place of those who have served their day and generation, and die a natural death, and in addition, to build up the colony for the honey flow. In this way it will be seen that a colony may be totally destroyed through spraying during fruit bloom, or as a result, be in so weak a condition numerically that it can give the bee-keeper no surplus honey when the proper season arrives. By the surplus honey season, we mean the time when the bees gather more honey than they require for their own use, and when that which is taken to market is reduced; this season does not arrive until later, when clover blossoms open.

An effect of less importance to the bee-keeper, but one of greater importance to the fruit-grower, is that the bees have been decreased in numbers until unable to fully carry on the work of cross-fertilizing fruit blossoms by distributing pollen. This, and not the gathering of honey, is the primary object of the existence of the honey-bee.

[The above article was written by request of the Hon. John Dryden, Minister of Agriculture, and at his suggestion it has been sent to the Canadian Press for publication.]

In addition to the above, the following has been published in connection with a bulletin issued March, 1898 by the Ontario Department of Agriculture, giving instructions in spraying:

DO NOT SPRAY TREES WHEN IN FULL BLOOM.

1. Its is not the right time to spray.
2. It may destroy insects that are then fertilizing the blossoms.
3. It is destructive to bees.
4. It is forbidden by law.

AN ACT FOR THE FURTHER PROTECTION OF BEES, PASSED 1892.

1. No person in spraying or sprinkling fruit trees, during the period within which trees are in full bloom, shall use or cause to be used any mixture containing Paris green or any other poisonous substance *injurious to bees*.

2. Any person contravening the provisions of this Act, shall, on summary conviction thereof before a justice of the peace, be subject to a penalty of not less than \$1 or more than \$5, with or without costs of prosecution, and in case of a fine or a fine and costs being awarded, and of the same not being upon conviction forthwith paid,