

It would be difficult to find a system better suited on the whole to either the grower or the purchaser. These, after all, are the only people to be considered; as the merchants, commission people, and other intermediaries are quite capable of looking after themselves.

A uniform pack of both apples and peaches throughout Canada on such a basis would satisfy all parties and would give the grower—what he does not always get—a fair percentage of the price

paid by the public; while the latter when purchasing would know exactly what they were getting and would not be fleeced as they constantly are in the large cities, especially in Toronto. Further, cooperative unions should advertise the price of fruit and make it known to the public where fruit can be obtained at its proper price. Much of the jobbery in the commission trade could thus be obviated, and producers and consumers brought more closely together.

## The Railroad Worm\*

Arthur Gibson, Assistant Entomologist, C. E. F., Ottawa, Ont.

**T**HE apple maggot or railroad worm is responsible for considerable damage in certain districts of Quebec province. Recently it has increased conspicuously and is now more numerous than ever. In many Ontario orchards also the insect has been particularly prevalent. Owners of orchards where this insect occurs should not allow it to increase.

The life history of the insect is briefly as follows: The adult flies emerge during the latter part of June and during the month of July. It has been stated recently by Illingworth that the eggs are about three weeks in developing within the body of the female flies. When depositing the eggs the female, by means of her sharp ovipositor, inserts them beneath the skin of the apple and the young larvæ hatch within a week, the exact time varying according to weather conditions. The maggots at once begin to feed upon the flesh of the apple, making winding burrows through the pulp until they reach full growth in from a month to six weeks. These burrows, or tunnels, soon become reddish or brownish in color and are easily seen when the fruit is cut. It is owing to this habit that the maggot is called the railroad worm.

The female flies are each capable of laying three hundred to four hundred eggs, and a single apple may contain several maggots, the work of which, of course, causes it to ripen prematurely and fall to the ground. The small white maggots are difficult to detect when young, but as they become mature and the tunnels larger they can readily be seen. When the injured apples fall to the ground, the maggots soon leave them and enter the earth to the depth of an inch or so, where they change into brown puparia and in this state they pass the winter, emerging as flies the following summer.

### GATHER FALLEN FRUIT

It is of the utmost importance that all fallen apples be gathered as soon as possible after they leave the tree. This should be done every day, if possible, or at least every second day. In this way

the maggots will be secured before they leave the fruit. When the windfalls are gathered they should at once be got rid of in some way either by feeding them to stock or by burying them in a deep hole with not less than three feet of earth on the top.

In some orchards where the apple maggot is prevalent, pigs are allowed to run about from July when early apples which are especially susceptible to attack, begin to fall, until all the fruit is gathered. Cattle and sheep have also been allowed by some to pasture in the orchard when the fruit is falling, but there is an objection by many fruit growers to such animals, especially cattle, having the freedom of orchards. As the maggots work entirely within the apple, they cannot be reached by any of the poison spray mixtures which are used for insects which attack the foliage. Fortunately, the natural spread of the apple maggot is slow. The flies, when they emerge from the ground, do not apparently fly away to any distance, but remain in the immediate vicinity, and

the females deposit their eggs in the apples on the trees nearest to where they have emerged. Recent experiments in South Africa and Italy have shown that the adult fruit flies can be poisoned by spraying the trees with a sweetened arsenical.

The flies, which are rather smaller than the house fly, are readily seen on the trees. They have two wings, each of which is conspicuously crossed with four black bands, which together somewhat resemble the outline of a turkey. The body, which is black, is crossed with bands of white, and there is a white spot in the middle of the back. Careful watch should, therefore, be kept for the exact appearance of the flies, and when they are seen it would be well worth experimenting to destroy the adults. In South Africa and parts of Europe, as above mentioned, poisoned baits have been used successfully against closely allied flies. For instance a mixture of sugar three pounds, arsenate of lead four ounces, and water five gallons, has been applied to the trees so that the solution would be deposited in large drops. It was found that the flies were attracted to the sweetened mixture which they readily ate and, of course, were killed.

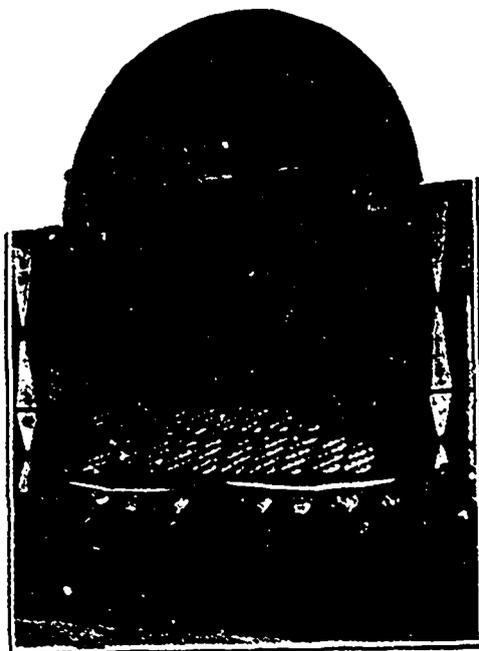
In New York State, Illingworth reports that experiments were first made with arsenate of lead sweetened with corn syrup. The flies, it is said, fed greedily upon it, but were slow in dying. A soluble poison bait was then prepared as follows, and it is reported that it proved to be effective:

Water, forty-five parts; corn syrup, four parts; potass. arsenate, one part.

"About a pint of this was sprayed on the lower branches of a twenty-year-old tree. The burning from the soluble arsenate was of little consequence, for so few leaves were sprayed and the destruction of the flies was apparently perfect, killing them in less than thirty minutes after the first sip."

In pruning I believe in regular annual pruning. In this way it is never necessary to cut off any very large limbs. In fact it should be called thinning out of the wood rather than a pruning. I have never done much thinning, just enough to make me believe in the system. With such varieties as Baldwins and Wealths it would pay to take off half the apples in order to make them bear annual crops. I intend experimenting thoroughly in this way this year by thinning out the apples on one side of the trees and leaving the other without thinning, and will note results.—W. H. Gibson, Newcastle, Ont.

Nitrogenous manures must be used with great care and their successful use depends on good judgment and the provision of a simultaneous supply of potash and phosphate.



Well Packed Quebec Province Apples

This excellent exhibit of apples was made at the Province of Quebec Exhibition by Rev. Father F. Leopold, of the Agricultural Institute at La Trappe, Quebec.

\*Extract from a paper read before the Quebec Province Fruit Growers' Association.