

oodling-moth, there is scarcely a possibility of injury to the consumer of the fruit. A mathematical computation will quickly show that where the poison is used in the proportion of 1 pound to 200 gallons of water (the customary proportion) the arsenic will be so distributed through the water that it will be impossible for a sufficient quantity to collect upon any given apple to have the slightest injurious effect upon the consumer. In fact, such a computation will indicate beyond all peradventure that it will be necessary for an individual to consume several barrels of apples at a single meal in order to absorb a fatal dose, even though this enormous meal be eaten soon after the spraying, and should the consumer eat the entire fruit.

As a matter of fact careful microscopic examinations have been made of the fruit and foliage of sprayed trees at various intervals after spraying, which indicate that after the water has evaporated, the poison soon entirely disappears, either through being blown off by the wind, or washed off by rains, so that after 15 days hardly the minutest trace can be discovered.

In order, then, to receive a fatal dose of the poison, an individual must "*consume several barrels of apples at a single meal!*" *Whew!* Please excuse us from such an experiment to test the poisonous effects of sprayed fruit! How foolish to suppose that one or two apples could possibly contain a sufficient amount of the poison to produce any apparent effect!

In the line of actual experiment as indicating the very finely divided state of the poison, and he extremely small quantity which is used to each tree, Prof. A. J. Cook, of the Michigan Agricultural College, has conducted some striking experiments. A thick paper was placed under an apple tree which was thoroughly sprayed on a windy day, so that the dripping was rather excessive. After the dripping had ceased, the paper (covering a space of 72 square feet) was analyzed, and four-tenths of a grain of arsenic was found. Another tree was thoroughly sprayed, and subsequently the grass and clover beneath it was carefully cut and fed to a horse without the slightest sign of injury.

The whole matter was well summed up by Prof. Riley, in a recent lecture before the Lowell Institute, in Boston, in the following words:

The latest sensational report of this kind was the rumor, emanating from London, within the last week, that American apples were being rejected for fear that their use was unsafe. If we consider for a moment how minute is the quantity of arsenic that can, under the most favorable circumstances, remain in the calyx of an apple, we shall see at once how absurd this fear is; for,

even if the poison that originally killed the worm remained intact, one would have to eat many barrels of apples at a meal to get a sufficient quantity to poison a human being.

Moreover, much of the poison is washed off by the rain, and some of it is thrown off by natural growth of the apple, so that there is, as a rule, nothing left of the poison in the garnered fruit. Add to this the further fact that few people eat apples raw without casting away the calyx and stem ends, the only parts where any poison could, under the most favorable circumstances, remain, and that these parts are always cut away in cooking, and we see how utterly groundless are any fears of injury, and how useless any prohibitive measures against American apples on this score.

Such, then, is the result of the investigation as made by the expert scientists of the Department of Agriculture, and various State Agricultural Colleges. It should inspire confidence in the heart of every consumer of American fruits, and also cause every lover of justice and honor to co-operate in the efforts to establish and extend the knowledge of the harmless effects of sprayed fruits when such spraying is properly applied.

Mr. C. S. Walters, in the *Farmers' Home*, writes thus wisely on the subject, urging harmonious action on the part of horticulturists and bee-keepers:

The fruit and honey interests should work together, and for the latter it is very important that the spraying of trees should be done at the right time. It is an unnecessary and useless labor and expense to spray the fruit trees when in blossom. The proper time to have good effect is to spray immediately after the blossoms have fallen. Paris green and London purple must both be deposited on the fruit itself to have any effect, and this cannot be done when the blossoms are on the trees. The petals of the blossoms cover the fruit until they have withered and fallen from the trees.

Spraying the trees when the blossoms are on them is labor thrown away. Moreover, whole colonies of bees are killed off by eating such poison in the blossoms of the fruit trees, and this is the chief loss.

That the bees should ever receive their death at the hands of unwise fruit growers, is to be regretted, and perhaps cannot better be prevented than by seeing to it that all who must spray with poisonous compounds do so at a time which shall not endanger the lives of the bees, that are really the most helpful of all agencies in producing a bountiful yield of luscious fruits. If the presentation of simple argument will not have the desired effect in securing the respect of the fruit-growers, of course nothing remains except an appeal for the enactment of such legislation as shall protect bee-keepers from loss on account of carelessness and wilful ignorance.

The apiarist cannot afford to lose his bees, and the farmer or fruit-grower cannot afford to kill the bees. They are a benefit to both, and should be protected in every way possible.