

salt and sulphur) has added further evidence of its value as a winter wash for all kinds of fruit trees and bushes, and I might say, that this only corroborates the opinion of leading fruit-growers in the States to the south of this Province.

"It is generally noted that so much improvement results from its use in the health and vigour of the trees to which it is applied, as alone to justify the cost of the work.

"In some localities good work has been noted as being done by predaceous insects preying upon these injurious to plant life—the larva of *Syrphus* flies and Lady-bird beetles being very active during the warmer months in the destruction of aphides, and proving of great assistance in holding these pests in check. It will not, however, do to rely on this help to the neglect of spraying, as in the fall months the beneficial insects cease to work, and in a short time the aphides are generally to be found again continuing their species.

"Experiments made with the Leggett Powder Gun, for the distribution of insecticides in the form of powder, demonstrate that the machine is of service in dealing with such pests as the gooseberry or currant worm, and the cherry and pear slug, saving much time and material.

"My sincere thanks are due to Dr. Fletcher, Dominion Entomologist, for assistance kindly and promptly given in the naming of specimens of insects and help in carrying on my work.

Also to Mr. E. A. Carew-Gibson, who is making a special study of economic entomology for the Department of Agriculture, and, by collecting and observing specimens of insects through their different stages of existence, has rendered valuable assistance.

"As in previous years, the press of the Province have been kind enough to insert in their issues, at appropriate seasons, items furnished them in regard to the spraying of fruit trees, thus reminding fruit-growers of their duties in this respect—when most necessary. In the following pages I have compiled information from reliable sources and personal experience as to the best methods of contending against insect attacks and diseases of fruit trees, plants, etc., outlining the life history of the most important pests and diseases occurring in the Province, and giving formulas and directions for preparing the different spraying mixtures, which I trust will prove useful."

There is probably no one general method by which the farmer or fruit-grower can do more to protect his crops from insect injury than by "clean culture." A large proportion of injurious insects pass the winter under rubbish of many sorts, and the burning of this will destroy them.

It is a safe rule, whenever a crop is gathered, to clear off the remnants and destroy them as completely as possible. In orchards this recommendation is of special value. In dead

wood on the trees, or on the ground, many species hide or complete their development during the winter. Every dead branch or twig should be cut, and with other rubbish taken out and burned. Loose bark is of little or no value to a tree, while it affords shelter to many hibernating species. Never leave an old wood-pile near an orchard. Many insects breed preferably in dead wood, but when it becomes too dry or rotten, they have a sharp instinct that enables them to discover a weak or sickly tree, and this they may attack and ruin, where otherwise it might recover. Fallen or diseased fruit should always be destroyed or fed to hogs.

Field and orchard should contain, as nearly as possible, nothing save the crop, and certainly neither rubbish nor remnants.

For field crops, a thorough system of crop rotation prevents the multiplication of many insect pests and plant diseases. It is a well established general rule that plants or trees are better able to resist insect attack when in a thrifty growing condition than when weak in vitality; consequently, such fertilisation as will bring about the healthiest growth is desirable.

It has long been observed that some varieties of fruits, vegetables and grains are more subject to insect attacks than others. Consequently, other things being equal, it is advisable

to select such varieties for planting. Of mechanical methods, the simplest way of dealing with many insects, is to pick them off by hand; in the garden and home grounds, caterpillars of most kinds may be easily dealt with so, or their nests destroyed, in the case of those having such.

In the great majority of cases, the most effective methods of preventing insect injuries lies in the intelligent application of insecticides, or insect killing substances. These may be broadly divided into two classes:—(1) internal poisons, or those which take effect by being eaten with the ordinary food of the insect; and (2) external irritants, and those which act from

**Beneficial
Insects.**

**Assistance
Acknowledged.**

**A Safe Rule to
follow.**

**Various methods
employed.**