

Emulsions of kerosene and milk, or kerosene and soapsuds, are employed in America. Diluted carbolic acid employed as a wash has been highly recommended. Soft-soap, dissolved in boiling water, with the addition of caustic potash and sulphur, forms an excellent remedy. Sulphur and lime used as a whitewash; fish-oil; soft-soap dissolved in boiling water with carbolic acid.

Many other remedies might be mentioned, but, so far as my experience goes, nothing has proved superior to the mixture of castor-oil and soot mentioned at the outset.

Syringing with soapsuds or other liquids has been often advised, but no amount of syringing would be sufficient to clean a badly-infected tree, as it would be impossible to force fluids into all the innumerable chinks and crevices of the diseased outgrowth.

Trees may be protected from American blight and other aphides by planting the common tall nasturtium (*Tropæolum majus*) at the root, and allowing it to ascend the stem. I believe this to be a specific with regard to the root.

#### CANKER-WORM (*Ctenopseustis obliquana*).

The larval state of this moth is becoming increasingly troublesome to apple-growers in the Nelson, Marlborough, and Auckland Districts. At Cambridge it is termed the "privet-moth," but I could not learn that it had been observed on that shrub.

The small green caterpillar feeds upon the leaves of the apple, which it glues together by its adhesive threads; it is however, most injurious when it fastens a leaf to the side of the fruit, forming a secure hiding-place from which to attack the epidermis of the apple at its leisure. A considerable amount of injury has already been caused by this insect, and, unless measures are taken to keep it in check, its ravages may be expected to assume larger dimensions.

For a description of the insect and means of prevention, see under "Apricot."

#### APPLE-SCALE (*Mytilaspis pomorum*).

At the present time this pest is causing serious loss in the Nelson and Canterbury Districts, where, in certain localities, it has led to a diminution in the annual yield. It is, however, not uncommon in other parts of the colony, and it is found to infest not only apples, but pears, plums, hawthorn, and other trees.

In old neglected orchards the mussel-scale is sometimes so abundant as to form a scurfy crust over the bark, the shells secreted by the insects being in contact; usually, however, it is not so densely packed. Badly-infested trees present a starved appearance; neither leaves nor fruit attain their full development.

In the young state the insect is extremely minute, wingless, but possessed of active locomotive powers; the body is oval, furnished with three pairs of legs, a pair of antennæ, a pair of eyes, and curiously-modified mouth-organs adapted for suctorial purposes. The locomotive stage rarely lasts more than a week, when the insect is found to be attached to the epidermis by its suctorial beak, and its metamorphoses commence. It casts off the first coat or pellicle, which it has outgrown, and within two days of becoming stationary commences the formation of its test or shield, which is composed of a secretion produced by the spinnerets on the under surface of the abdominal region, combined with the two coats or pellicles cast off by the insect. The shield is attached to the bark by its margin, but does not attain its full growth until after midsummer, requiring a period of seven weeks for its completion, when the insect is found to have attained its mature state, and to occupy the greater portion of the space protected by the shield, but without being directly attached to it. Having no further use for organs of sight or locomotion, it has thrown off its eyes, three pairs of legs, and its antennæ, with its cast-off coat, and now resembles a minute grub. It commences to deposit eggs, the process occupying about a fortnight, during which time the insect has become reduced to less than one-third of its size at maturity, and occupies the upper portion of the shell, the eggs filling the lower portion. As a rule the eggs are not hatched until the following spring. The male of this species has not been observed.

In America this insect is considered to cause a greater amount of injury than any other, and I believe this to be true in the Nelson District at the present time.

Although numerous remedies have been proposed, it must be confessed that few have proved satisfactory in practice. Many of them require the removal of the scale by rubbing or scraping, a process involving the unnecessary expenditure of a large amount of time and labour, as the insects can be destroyed and the trees kept in a clean condition at a very small cost and with but little trouble.

Castor-oil, containing 2oz. of soot to the gallon, as recommended for American blight, is thoroughly efficient under all conditions when properly applied.

At the School of Agriculture, Lincoln, several hawthorn plants amongst the ornamental trees were so badly attacked by the apple-scale that their bark was completely encrusted, their leaves shrivelled, became discoloured, and fell away without reaching maturity. The bark was lightly washed with the castor-oil mixture, applied with a paint-brush, the result being a complete success: the scale fell away, the bark assumed a healthy appearance, and new leaves were developed within six weeks of the first application. As a matter of precaution a second dressing was applied later in the season, and the trees remained in a healthy state. In planting the experimental orchard a few trees just received from the nurseries were found to be slightly infested with scale and American blight; the parts affected were treated in the same way, and, although the orchard is in a district where infested trees are much too common, a careful examination in the early spring, and the application of the wash to any branch on which scale or aphids had effected a lodgment, was found sufficient to eradicate the pests with very little trouble.

A mixture of kerosene and linseed oil has been recommended, and without doubt would prove