

should have a complete band of raupenleim or tanglefoot on the inner face of the sides near the top, so as to prevent the escape of the young caterpillars, and should be covered with wire netting. The boxes should be removed after the parasites have emerged.

#### SPRAYING WITH ARSENATES.

When the egg-masses have not been removed from the trees, and the caterpillars are numerous upon the foliage, it is possible to prevent further injury by spraying the trees with lead arsenate paste at the rate of 5 to 15 pounds to 100 gallons of water. Lead arsenate is better for this purpose than Paris green, since it can be used in stronger solutions without danger of serious injury to the foliage, and it adheres to the leaves for a much longer time. Five pounds of lead in one hundred gallons of water will kill the caterpillars at the time of hatching, 10 pounds of poison should be used if the caterpillars are more than a few days old, and 15 pounds after they are one-third grown.<sup>1</sup>

The first application should be made, if possible, just before the eggs hatch, or at least as soon as the caterpillars appear; the sooner they are killed the less the injury will be, and also the caterpillars are much less readily killed by poisons after they become one-third grown, or even after a few days' feeding. Their first meal should carry the poison. See also page ...

After caterpillars have been killed by the use of poison, the trees may again become infested by the older wandering caterpillars from nearby foliage. While these may actually cause little injury to the foliage, they will spin their cocoons on the trunks and branches and infest the trees for the following season. For this reason it is necessary to band the trunks before the caterpillars begin to migrate.

As a rule it would be better to depend chiefly upon the destruction or removal of the egg-masses, during the dormant season, for control in cities and towns in moderate infestations. A very heavily infested tree is often seriously defoliated before the spray can take effect, unless the poison is upon the leaves when the caterpillars hatch and begin to feed. The discoloration of the foliage and the houses by the spray mixtures is also an undesirable feature. When, however, the trees are very heavily laden with egg-masses, such as occurs this winter in some Ontario towns, it will be at least extremely difficult to remove all the egg-masses from all the most heavily infested trees. Under such conditions it is felt that the proper method of procedure is to clean the egg-masses completely from the less heavily infested sections of the city, and in the most heavily infested portions to remove all egg-masses from the trunks and larger branches, but without attempting to remove all from the tops. Arrangements would be made to spray these partially cleaned trees with lead arsenate as soon as the caterpillars appear or, preferably, immediately before the eggs hatch, as well as any others which require it. The trees should all be banded with raupenleim or tanglefoot to prevent infestation from egg-masses on neighbouring fences and the buildings, if such are close at hand. Every city with many valuable shade trees to protect should own a suitable power-spraying outfit. With a proper equipment it would always be possible to check outbreaks of either biting or sucking insects on the foliage. The White-marked Tussock is only one of many injurious shade-trees insects.

#### BANDING THE TREES.

It has already been pointed out that after the egg-masses or the caterpillars have been destroyed the trunks of the trees should be banded so as to prevent reinfestation by wandering caterpillars. If there is any danger of infestation

<sup>1</sup>This rate is for application to shade trees; for use on fruit trees see page 12. The powdered form of lead arsenate is used at one-half these strengths.