purpose of secreting a small amount of poison within the eye of the apple, to be held there by the closing of the calyx to guard against the entry of the grub at this point later in the season.

Only under exceptional circumstances is the codlin-moth active in the orchard before the end of the second week in November. Therefore, when the earlier sprayings are not applied before the calyx closes — and this period is now past — the spray becomes practically wasted material if applied before the 10th or 12th November. From this time onward, however, spraying should be regularly and thoroughly done. The period between sprayings should not be more than three to four weeks, the former interval being in every way preferable.

It is well known that many orchardists spray much less frequently than this. Four, five, or even six weeks' interval between sprayings is not uncommon, but in all such cases the loss of fruit is very much greater than would pay for the additional applications. Not only does this loss apply to grubby and moth-blemished fruit, but also to fruit blemished by the leaf-roller caterpillar, which in some districts during the past season or two has become a more serious menace than the codlin-moth. For the control of moth spray with arsenate of lead at the rate of 1½ lb. to 2 lb. (paste) or 1 lb. to 1¼ lb. (powder) to 50 gallons of water.

Leaf-roller Caterpillar.

As far as all practical purposes are concerned the life-history of this pest resembles that of the codlin-moth, with three important exceptions. (1.) The young grub is not entirely dependent on the fruit for food, but secures nourishment also from the foliage, and may be therefore more or less grown, and consequently more difficult to kill, where it attacks the fruit. (2.) The chrysalis stage is passed between leaves rolled or sealed together for protection, and also in the stem end of the fruit. In regard to the latter condition, fruit is often wrapped with the chrysalis still in the stem-cavity. The rolling of the leaves and the sealing of the leaf to the side of an apple not only affords protection for the chrysalis, but also protects the grubs in different stages of development from the effects of the spray. (3.) Unlike the codlin grub, the leaf-roller caterpillar does not necessarily confine its attention to single fruit, but may pass on from one to another, blemishing several. Therefore fruit unblemished when packed may open up considerably damaged through a few grubs being packed within the case.

The ability of the grub to survive on the foliage would at first glance appear to afford it little advantage, as the foliage as well as the fruit of a sprayed tree is more or less coated with