

top and work downwards giving as much attention to the inside of the trees as is given to the outside parts. Consider the windage, and work in dull weather or afternoons if possible. For larger areas a barrel pump is more suitable than the bucket pump.

ATTENTION TO DETAILS.

Another important point affecting results is the preparation of sprays. Buckets used for oil should not be used for bordeaux mixture or lime-sulphur without being washed, or vice versa; it is a good plan to keep separate vessels for the purpose. Weighing and measuring of ingredients must be accurate. A little too much or too little may burn the trees and cause loss of the crop. When mixing have a batten handy to stir the mixture well, and again occasionally, while applying it, so as to prevent any settlement of the ingredients.

SPRAY AT RIGHT TIME.

To be effective sprays must be applied at the right time. Codling-grubs are feeding in November, and are about until February and March, the period varying slightly with locality. Scale insects are dealt with at almost any time, but are more easily destroyed in early spring just before their eggs begin to hatch. Woolly aphid is most dangerous in autumn, when winged emigrants appear, which establish new colonies.

Red-mite eggs, which are often found about the base of leaves and twigs, hatch in early spring, and egg-laying is active about the month of March in such places; effective work can be done by spraying at these times. Black-spot spores issue in early spring from the fungus wintering on leaves and branches, and settling on the leaves and fruit, under suitable conditions, make root-like growth which penetrate the tissues of the host. Usually the most dangerous period is during September, October, and November.

Powdery mildew spores become active early in the spring at the time the buds are swelling. Suitable measures taken during September, October, November, and December will do much to control this trouble.

These facts are given to show the importance of spraying at the time mentioned in the directions which follow.

CODLING-MOTH.

Considerable loss results each season from the depredations of codling-moth in apples, pears, and quinces. This can easily be remedied by careful and systematic spraying with arsenate of lead. Although it may not appear so, codling-moth is one of the easiest insect pests in the orchard to control, always provided that the main principles are adhered to—namely, correct strength of arsenate of lead and thor-



Stages of Apple-Blossom Development: (1) Green-tip; (2) tight-cluster; (3) open-cluster; (4) pink; (5) full-bloom; (6) petal-fall; (7) calyx-closed.

[Drawing by N. J. Adamson.]

oughness of applications at the correct times.

A knowledge of the habits of this insect at once indicates a method of intelligent control. We have learned that (1) it lives by eating the fruit, therefore we cover the latter with a weak poison, such as arsenate of lead, thereby destroying the grub; (2) the grubs hatch in late spring, and through summer from eggs laid by the female moth on the young forming fruit or leaves, consequently we commence spraying the young forming fruit early, and continue at frequent intervals throughout the summer; (3) as a large proportion of the grubs enter through the eye or calyx end, we endeavour to fill the calyx cavity with spray before it finally closes; (4) the grub changes into a moth, the female of which will lay eggs to hatch into more grubs, and we must therefore destroy all grubby fruit to reduce the numbers for further infection.

SPRAYING TREATMENT.

From these considerations, therefore, the following spraying treatment is recommended:

Proportions.—Arsenate of lead powder form, 1oz. (if in paste form 2oz.); water, 4 gallons.

Preparation.—Weigh out 1oz. of arsenate of lead (powder) and place in a small vessel; slowly add a very small quantity of water, mixing thoroughly all the time. When the whole is about the consistency of milk pour into a kerosene-tin or other vessel and make up to 4 gallons of water. This wash requires to be frequently stirred while being used.

Application.—Spray when two-thirds of the blossoms have fallen, with considerable pressure, and force the liquid into the "eyes" of the young fruit. Repeat every three weeks until February. Future applications will depend on district and