

question, were seen by the writer during the past summer. These vary in degree from complete killing of the tree to bud killing and include root killing, collar rot, bark splitting, sunscald, black-heart, killing of bark on the trunk, crotch injury, killing of bark on large and small limbs, killing of fruit spurs, killing of fruit buds, and killing back of terminal growth.

#### ROOT KILLING.

The roots of young fruit trees are sometimes killed in winter, while the trunk and branches are uninjured. Trees injured in this manner usually come out in leaf in the Spring, but in a short time the leaves wither and die. If the roots are examined the bark will be found to be dead and brown. Root killing is caused by deep freezing and is induced by the following factors: Tender root stocks used in propagation, absence of snow or other protective coverings, exposure to strong cold winds, late fall plowing and poor soil drainage. This form of winter killing is generally worse on light sandy or gravelly soils, especially on ridges of the same soil types. Professor Macoun states that very little root killing has occurred at the Central Experimental Farm since the roots of the Siberian crab have been used as stocks for grafting.

#### COLLAR OR CROWN ROT.

Collar or crown rot is so called because the bark near the collar or crown appears to be dead and brown. The injury may be found on a small area of the bark or it may extend all the way round the tree and for some distance above the ground. Certain varieties of apples such as the King, Ontario, Pewaukee, Duchess, Gravenstein, are susceptible to this form of injury. Cherry and peach trees are also occasionally affected by this form of winter killing.

#### BARK SPLITTING.

Bark splitting may be noticed on Sweet Cherry Trees and on some varieties of apples. The bark is often split vertically from the ground up for several inches; in some cases almost up to the limbs. One or several splits may occur and in extreme cases the bark will split away from the trunk laterally as well as vertically. A few trees were seen on which the bark could be pulled entirely away from the trunk by taking hold of one of the exposed edges. In apples the Stark and Ontario are quite susceptible to this form of injury.

#### CROTCH INJURY.

Trees affected with crotch injury showed an area of dead bark in the crotch. This might be confined to the crotch or it might extend clear around the base of the limbs and in some cases, also the trunk just below the crotch. Several trees were observed on which the dead area of bark extended down the trunk in a long V shape or in an irregular form. The varieties most affected were Young Northern Spy, Cranberry Pippin, Baldwin, Gravenstein and Scarlet Pippin.

#### KILLING OF BARK ON TRUNK.

On many trees the bark on the trunk was found to be dead and discolored. The dead area might be confined to large patches or as was frequently noticed nearly all the bark on the trunk above the snow line was dead.

#### BLACK- HEART.

This is common trouble on young Baldwin trees in many parts of Ontario and is especially prevalent on trees growing in areas exposed to cold winds. One Grower in Norfolk has lost several hundred Baldwins from Black-Heart. Black-Heart may sometimes appear in the nursery but will also attack older and