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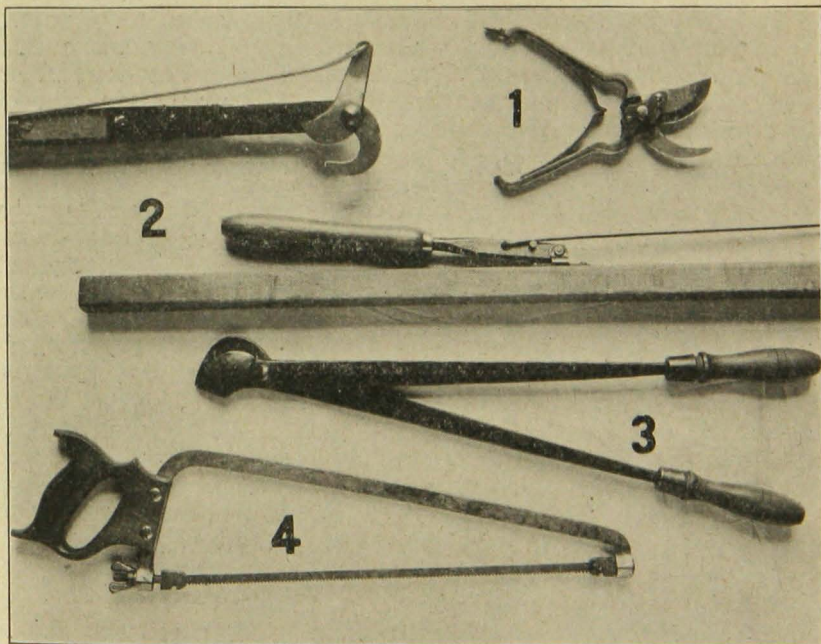
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PRUNING THE APPLE

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Pruning in general may be divided into two classes according to age of trees: (1) formative pruning on young trees, (2) corrective pruning on bearing trees.

The type of pruning, or training, generally used today is some modified form of the central leader type whereby a main



PRUNING TOOLS

1. A good type of pruning shear. Note in particular the type of spring. 2. The upper and lower end of pole pruner. This single guard type is preferable to the double guard. 3. A strong make lopping shear.
4. Swivel saw, well made and having a strong handle.

central stem is carried well up into the top of the tree. This method keeps the tree low headed and makes possible a development as nearly natural as possible.

TOOLS NEEDED

For the first few years practically all work can be done with a good strong pair of hand pruning shears. Later a swivel saw, pole pruner, and lopping shears will be needed.

PRUNING AT PLANTING TIME OR END OF FIRST YEAR

If the trees are unbranched whips when set out they should be cut off at the height desired for the head of the tree, about knee high, and allowed to grow for a year. At the end of the first year there should be enough shoots that it will be possible to form the head. If trees are branched when set out the head may be formed immediately.

This first pruning is of great importance, for upon it the shape of the mature tree is largely dependent. First remove all injured or diseased shoots, or shoots which for any reason are not suitable to become a part of the tree. A mental vision of the tree after it has been pruned is of great value in all pruning operations. One may aid himself in obtaining such a vision by bending to one side any shoots which he expects to remove and viewing the tree as it would appear without them.

Select four or five shoots distributed vertically and evenly spaced around the trunk. The lowest shoot should be from twenty to thirty inches from the ground. The remaining shoots which are to make up the frame should be from 3 to 6 inches apart and selected from such places on the trunk as will leave the tree well balanced with branches on all sides.

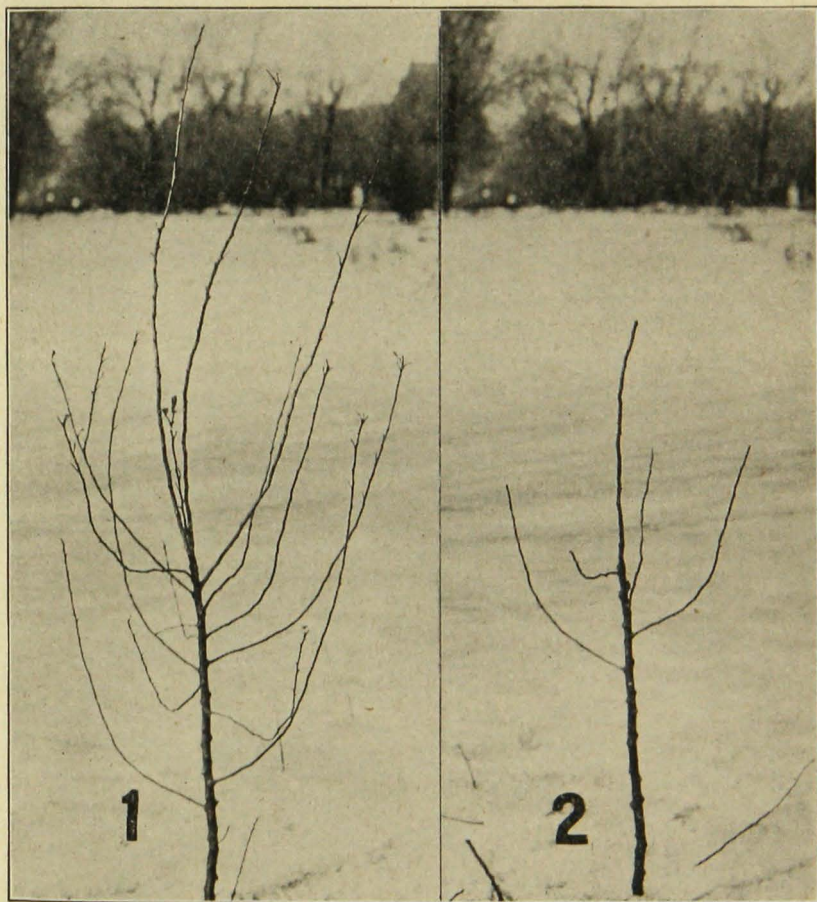
Care must be taken to avoid weak crotches. This may be done by selecting shoots which make nearly a right angle with the trunk. After these shoots have been selected remove all others and cut back those which remain to twelve or sixteen inches in length. If growth is very weak cut the scaffold branches back to stubs three or four inches long from which strong growths may be expected the following year. Always cut back to a bud on the outside of the shoot. The cut should be not more than an eighth of an inch above the bud and at an angle with the bud at the point. The central stem should be cut back to from eighteen to twenty-four inches above the highest side branch. If the side shoots are short the central stem must also be short to promote a spreading habit of growth.

PRUNING YOUNG TREES UP TO BEARING AGE

Pruning the apple from the time when it is set until it reaches the bearing age is largely a process of training to produce a well shaped tree and to promote strong vigorous growth.

The second or third year the central leader or stem will have attained sufficient height so that a second scaffold about 30 inches above the first may be formed. The second scaffold is formed in much the same manner as the first and must always be kept sufficiently headed back not to outgrow the lower. This gives the tree a sort of "two story" appearance.

Aside from forming this second scaffold some thinning out of the shoots produced on the side branches will be necessary. One of two branches which cross or rub must be removed. The same is true of two branches which are likely to cross or rub after making further growth. Side shoots on lateral branches



PRUNING YOUNG TREES

1. A young tree a year after setting. 2. The same tree after first pruning. Note the number and arrangement of branches.

should not be allowed to grow within two feet of the main trunks. The tips of branches which have a tendency to grow long and slender should be cut back a little to keep the tree well shaped and to promote stocky growth.

After the second year pruning will consist largely of removing crossing branches, cutting out diseased or injured parts and water sprouts and thinning out branches where they are found to be too thick. By too thick we mean too many shoots on one

branch or an arrangement of branches which prevents sunlight from reaching other parts of the tree.

A small amount of heading back is usually necessary to prevent branches from becoming too long at the expense of stockiness. It should be done with discretion, however, for it must be remembered that wood is necessary to fruitfulness. Merely clipping off the ends of the longer branches is usually sufficient.

PRUNING BEARING TREES

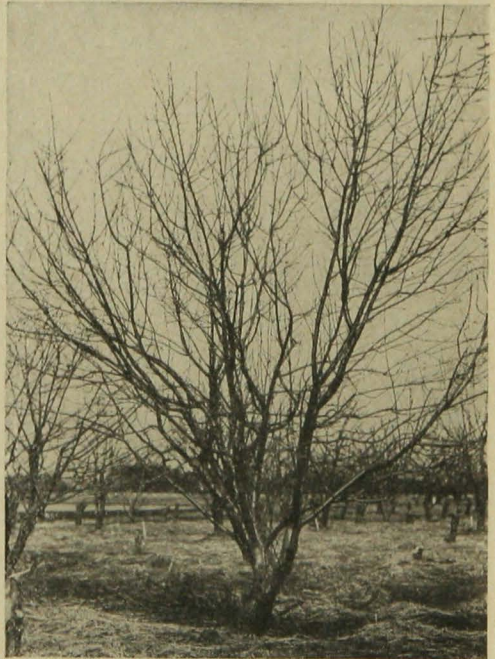
After the tree has reached the bearing age, pruning is largely a process of up-keep, thinning, and repair work. Water sprouts, diseased parts, and dead branches should be removed. Heading back, particularly of the top, is sometimes necessary to prevent the tree from becoming too tall. Thinning is largely taken care of by the removal of crossing branches.

Care must be taken not to injure or destroy fruit spurs, the small crooked twigs on which the apples are borne.

PRUNING TO PREVENT FIRE BLIGHT

In Minnesota, probably our most serious apple disease is fire blight. So far as is known the only practical means of control is pruning. This should be done in the summer as soon as the first signs of the disease, a blackening of the leaves, occurs. The diseased branch should be cut back at least a foot below the injured part, to a strong healthy side branch. Any branches found to be diseased at the time of winter pruning should be removed in the same manner.

Winter pruning is not a substitute for summer pruning in blight control; it merely supplements it. After each cut the wound and the tool used should be disinfected with corrosive sublimate, one part to one thousand, or one tablet to one pint of water.



UNPRUNED BEARING TREE

A bearing tree which has been neglected for a number of years.

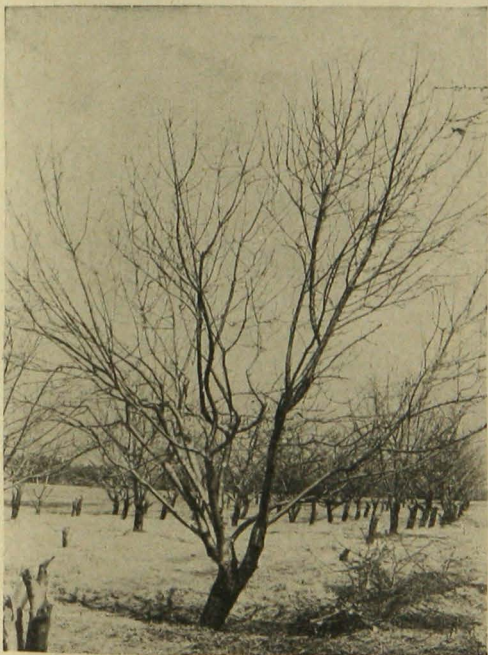
PRUNING OLD ORCHARD TREES

Many of the orchards which were planted ten years or more ago are in great need of renovation. In the first place, the trees in most of these orchards are set too close. In regions more suitable for apple growing, trees are set from forty to sixty feet apart each way. For Minnesota, however, twenty-five to thirty-five feet seems sufficient. Orchards which were set closer than this should be thinned to these distances as soon as the trees begin to crowd.

If the trees have been left unpruned they should be pruned to conform as nearly as possible with the type of tree formed by the pruning methods described in the preceding part of this paper. If heavy pruning is necessary it is better to extend this work over two to three years than to attempt to do it all at one time. Too heavy pruning is likely to injure the tree and prevent

fruiting. The first year cut out dead or diseased branches and cut back some of the longer limbs, especially in the top. Cut back to an outside branch which will give the tree a spreading habit of growth. After the tree has been cut back it should be about fifteen feet in height. If the lower branches are very thick it is well to thin them a little the first season.

The second and third year the tree may be thinned and trained to form a well shaped spreading head. The sunlight should reach all parts of the tree and all branches must have room to grow. After the tree has been shaped and thinned pruning consists mainly of upkeep and repair work.



PRUNED BEARING TREE

The same tree after pruning showing the amount of prunings which were removed in the pile at the right.

TIME TO PRUNE

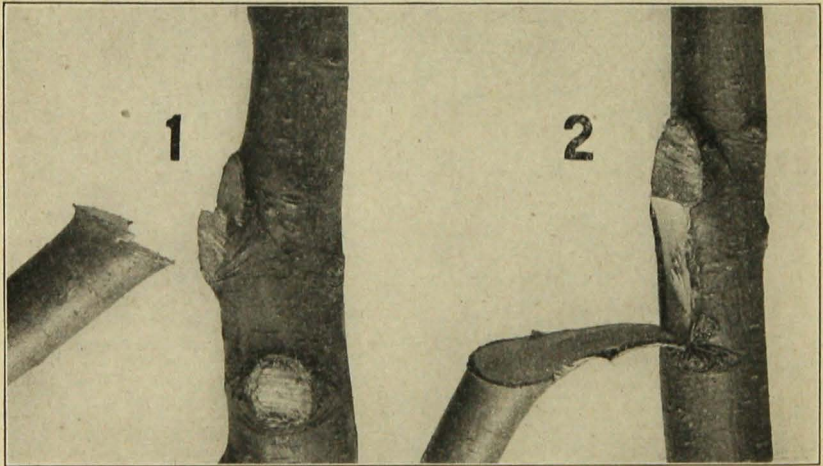
Pruning may be done any time during the dormant season, after the leaves drop in the fall and before the buds start in the spring. This is true of all pruning except that which is done for disease control or to repair broken branches.

MAKING CUTS

When removing a shoot or branch the cut should be made as close to the limb or trunk as possible, to prevent leaving a stub. Cuts should be made smooth and without injuring surrounding parts of the tree. When using shears always hold the blade next to the part which is to remain on the tree. This prevents injuring the bark with the guard. If a branch more than two inches in diameter is to be removed a cut on the under side should first be made to prevent tearing down of the bark and undesirable breaks.

TREATMENT OF WOUNDS

The statement sometimes is made that we should not prune our trees because the wounds will not heal. Careful experiments disprove this statement. In the fall of 1917 and spring of 1918,



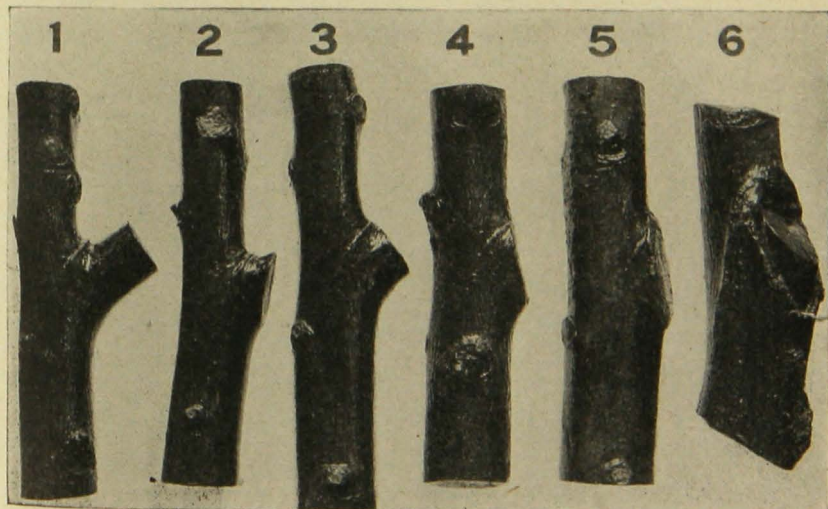
WHERE CUTS SHOULD BE MADE

1. Shows the proper way to make the cut. This branch was cut from the lower side first. 2. Shows the effect of not cutting the lower side first.

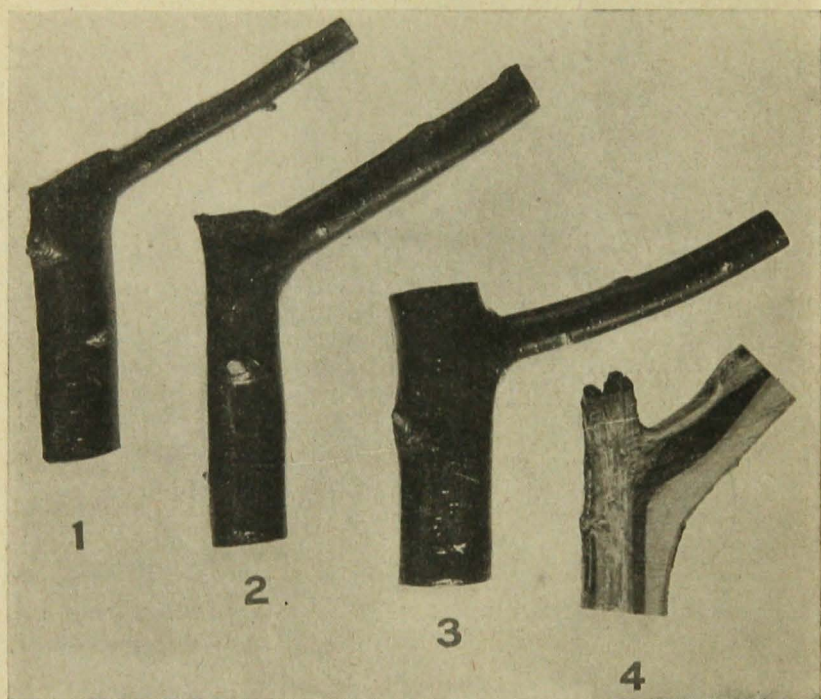
W. G. Brierley, associate professor of horticulture, University Farm, made extensive studies of pruning, and found that wounds when properly made and properly cared for will in time heal over except in the case of limbs in which decay had already started. Large wounds can not be expected to heal as rapidly as smaller ones. If the wound is more than three inches in diameter first treat it with weak carbolic acid or corrosive sublimate and then paint with white lead over the central portion. Liquid asphaltum may be used on the larger wounds providing it does not cover the bark. Cuts between two and tree inches in diameter should be painted with white lead and pure linseed oil. Smaller wounds need not be treated. It has been found that wounds will heal more rapidly if the surrounding bark is not covered with paint or other material.



Large stub at left in which knife is stuck can not possibly heal. Wounds of same size at right with healing nicely started.



Right and wrong ways to cut off a side branch. 1 and 2 are "stubs," 3 and 6 "shoulders," 4 and 5 are properly cut.



Right and wrong way to cut off an upright branch. 1 is correct with slope to avoid "shoulder," 2 a bad "shoulder," 3 a "stub," 4 a "stub" the interior of which is decaying.