

WHEN AND HOW TO PRUNE

(Concluded from first page)

defeat.

Horticulturists are fond of telling us that the function of the roots is to extract water, charged with certain mineral elements from the soil which is conveyed through the outer layers of the wood to the leaves, through which it passes and when it receives the carbon that the leaves extract from the air and transform into starch. Water so charged becomes what is known as elaborated sap and re-enters the wood, where it is stored temporarily and finally conveyed to the cambium which transforms it into the growth of new tissue.

Each part is the complement of the other and if a portion of one part is removed the equilibrium is disturbed and the general health of the tree suffers in consequence. Now, this is correct to just this extent: The balance, to which reference has been made, lies between the work that each part does and not between the parts themselves; and when a portion is removed of one part, the remaining parts up to a certain limit, do a little more work and the equilibrium is maintained. It is only when the pruning is so severe the equilibrium cannot be maintained that any injury results.

Now, there are three distinct forms of growth in which the fruitgrower is interested. One is the growth and development of the fruit buds, the growth and development of fruit naturally following. The second is the increase in the diameter of the trunk and branches. The third is the growth of the twigs, which includes terminal growth, increase in number of branches and development of fruit spurs. Moderate pruning stimulates growth in all of these directions, but not equally. It has been found that if pruning is done in certain seasons the bulk of stimulus is directed towards one form of growth, and if done in other seasons towards another form.

It has been found that if pruning is done about the time the leaves attain their full growth, though a portion of the elaborated sap will be stored for next year's use, a greater than normal percentage will be directed toward the growth and development of fruit buds. The reason for this is to be found in the so-called principle that the checking of wood growth will develop bud growth. The foundation of this principle lies in the cause of the circulation of the sap; but concerning this we know so little that discussion is of little use. It is more than probable that the cause lies in the inability of the diminished number of leaves to force the sap into the wood and so it enters the bud. But the moral is that if the object of pruning is to develop or stimulate the growth of fruit buds, the pruning should be done while the trees are in full leaf. It has been found that fall pruning has a tendency to force the growth of the body at the expense of both twigs and bud growth; that is, fall pruning will increase the diameter of the trunk, but it will not develop the growth of twigs or buds so rapidly as if done at other seasons of the year. If the tree is weak and spindling, with a small weak trunk the strength of which it is desired to increase, pruning should be done in the fall.

It is the tendency of all branches to increase in length by an extension from the terminal bud of each twig, but in the inner

angle that is formed by the union of each leaf stalk with its parent twig is a little bud that is capable of taking on all the functions of the terminal bud and developing into a branch. A few of these buds develop, but by far the greater number become dormant and are covered by the annual growth of the twig. If the terminal bud is removed, conditions become favorable for the development of the lower buds, and many of them do develop to a greater or less extent. The bud nearest the end becomes, to all intents and purposes, the terminal bud and contains the terminal growth. But the stronger of the axial buds develop, some into secondary branches, while in others the development is checked and they become fruit spurs.

Though we are somewhat in the dark as to the reason, experience has shown that this form of growth is hastened more rapidly by spring pruning. So if the object of pruning is to thicken the top of the tree, develop the growth of more branches, force the appearance of water sprouts, or increase the number of fruit spurs, the most favorable season for pruning is early in the spring. Also if the object is to develop the growth of a new top, as is often done in modern orchard renovation, spring is pre-eminently the season to prune. Conversely we find that this form of growth is almost completely checked if the pruning is done in midsummer. But the popular conception of pruning is that it consists merely of the removal of superfluous limbs, limbs that are dead or diseased, or that cross or rub against or interfere with other limbs; or that mar the shape and beauty of the tree. When this is the object of pruning and the pruning is moderate, the season has no influence except as follows: If a growth of water sprouts is removed in the early spring a new growth will immediately follow. If the removal is deferred until midsummer, there will be little or no new growth. It should be remembered that if the work is done in April a tree will readily recover from a pruning so severe that it would kill the tree if done in June or July.

Here we have the thing under our finger. If the object of pruning is to develop fruit buds, prune in midsummer; if to develop growth of body and limbs in diameter, prune in fall or early winter; if to develop growth of twigs, fruit spurs or more branches, prune in late winter or early spring; if to promote the health of the tree, prune as soon as the cause of the diseased condition of the tree becomes apparent; if to remove superfluous limbs, prune whenever it becomes apparent that their removal is desirable.

It is of much more importance to know how to prune than to know why and when. This is an exceedingly complicated problem, since in addition to those already given there are a score or more of other reasons for pruning, and each purpose requires a system differing more or less from the others. A young tree requires a different method from an old tree, and a tree that has received proper and intelligent care from year to year must be pruned on totally different principles from one that has been neglected. In fact, except when very small, no two trees ever present precisely the same problems. The inexperienced man who prunes one tree in a certain manner because another tree has been so pruned

is certain to do as much harm as good.

Practically all annual prunings are made on essentially the same lines. We thin the branches and cut back the terminal growth, provided it is sufficient to warrant us in so doing. When a tree or branch has reached a desired height or lateral extension and we wish to check further development in that direction, we remove all of the terminal growth of the previous season and do the work about the time the leaves attain their full size. We remove all diseased branches, those that rub against others, those that have failed to develop fruit spurs and those that by reason of their location cannot develop a high grade of fruit. We are told to remove the branches from the center of the tree in order to admit light to color the fruit. We remove those branches that develop in the center and fail to reach the exterior of the tree, but we do it to force the development of fruit to the outside where it can naturally obtain a sufficient amount of light. It is bad policy to remove bearing branches to admit light to color the fruit in the interior of the tree when little or none is there. The branches when loaded will bend outward and admit all the light that is necessary. Then we are told to thin severely in order to give size to the fruit. The correct way is to thin with the greatest moderation and to remove only the small and non-bearing branches and almost never the larger branches. A tree must have branches in order to bear fruit, and in order to increase the size of the fruit it is a thousand times better to thin the fruit than to remove bearing branches.

We remove the non-bearing branches and such of the water sprouts as are not needed to take the place of parts removed. The water sprouts that are allowed to remain are cut back to induce them to develop fruit spurs. Dead branches are removed and all diseased limbs that can be spared are cut back to the healthy wood. Then we remove branch-

es which from their location cannot develop marketable fruit, and lastly we remove bearing branches that are in any way objectionable. If one has not the ability and knowledge of the principles of pruning sufficient to form a symmetrical and satisfactory head on a young tree, he should not attempt to rebuild an old tree, for the task will be much more difficult.

G. A. BURKHEAD.

The Goats of Asia Minor.

The goat more than any other factor has assisted the rural inhabitants of Asia Minor to destroy the magnificent forests which once extended from Smyrna through to Konia, the ancient capital of Karamania. Not only have the peasants and nomads destroyed the timber for the sake of firewood, but they destroyed it also in order that their goats might obtain suitable pasture. And the goats in their turn prevented the new shoots ever after from replacing the trees which had been cut down.

Then He Landed.

"Beauty is a woman's most important attribute," said a New York beauty doctor. "She who increases beauty is woman's greatest benefactor. Husbands, brothers, even fathers—in their inmost hearts beauty is the thing they desire most to see in their feminine relations. Only the other day a gray, fat old gentleman entered a newspaper office and said:

"Are you the managing editor?"

"Yes," was the reply.

"I suppose that on you, then," said the visitor, "rests the responsibility for this morning's reference to my daughter Patty as Fatty. Take that!"

A Clever Rebuke.

A smart New York girl at Newport last summer administered a clever rebuke to a blase and patronizing young Englishman whom she met there. The girl overheard her hostess say that she wished to introduce the Briton to her (the New York girl), and the girl also caught his reply:

"Very well, trot her out."

When the Englishman was presented the girl bowed, carefully surveyed him from head to foot, and then quietly said to the hostess:

"Thank you. Now trot him back, please."—Lippincott's.

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