

The Catawba did as well at one time as the Concord does now. We suppose there were wet seasons and dry seasons. Probably they were wetter than now, for the scientists are telling us that the cutting away of forests increase dry times. Yet the Catawba did well in all the rain and drizzle these pre-generative days. There must be some causes besides mere climate. Yet it is strange to the mere looker-on that beyond the mere fact that the Catawba grape has done remarkably well this season, so little more should be positively known.

Liquid Manure for Pot Plants.

The beneficial results obtained from manure water, when judiciously applied to fruiting and flowering plants, have long been recognized by cultivators, and its use is now becoming more general. It is well known that the roots of plants are more healthy when growing in pure soil free from rank manure, and these roots will draw up more healthy nourishment to the plants from manure given in a liquid state, than when they are encased in rank material which they cannot consume. We know that our most successful grape growers use very little solid manure in the soil, only a few bones or bone meal, or similar material, which cannot give off more stimulant than the plants can consume, and also remains much longer in the soil as a fertilizer than manure, which dissolves rapidly.

The successful florist has more faith in giving stimulants when the plant really needs them than in keeping the roots buried in the soil made rich and almost offensive by strong manure. When roots are few and the plants almost at rest, the purer the soil and the less stimulant the plants receive, the better will they thrive when their roots come to draw up larger supplies of nourishment. Moisture is needed to soften the soil and to allow the roots to extract nourishment from it; but when all the virtue is out of the earth, and the plants begin to show signs of distress, all the watering in the world will not give vigor to the exhausted functions; but let a portion of guano or any well prepared manure be mixed with the water sufficient to color it, and let this be repeated at every watering instead of giving a much stronger dose at longer intervals, the result will be most satisfactory. I have tried a number of experiments this season with liquid manure, and all lead me to have faith in the application of it, at every watering, in a weakly state.

A number of old fuchsias were stunted and pot bound, but pressure of more important matters prevented our potting them into fresh earth; but to each watering a coloring of guano was allowed, and the plants with their pot bound roots, have not only made vigorous growth, but flowered freely from June onward to November. Some Pelargoniums, which were cut down last season and allowed to break in the usual way, were shaken out of the pots, and placed in smaller ones, but, when they should have been shifted, they were allowed to remain in the small pots, which were crammed with roots; guano water was given at all times when they required moisture; the plants grew and made fine foliage, and flowered better than others which were favored with large pots and fresh soil. Many other examples I could give to prove that giving liquid manure frequently, and not until roots are in abundance to consume it, is the proper way to deal with this important assistant to cultivation.

—Florist.

Pruning Trees and Vines.

It is a common saying among practical horticulturalists, that the best time to prune a plant is when such an operation is discovered to be necessary, and a man has a sharp knife in his pocket. This should not, however, be considered as literally true, although volumes of nonsense have been written in regard to particular days or months in which certain kinds of plants should be pruned. It is not well to prune vines or trees just at the time the sap begins to flow the most rapidly in Spring, because it is likely to issue from the wounds, discoloring the bark below, and making the plants look unsightly, even if no further injury follows. But if trees or vines are pruned early enough to insure a good frosting of the wounds for a few nights before the sap begins to flow, there will be little danger of what is usually termed bleeding. In many Northern localities this may yet be done, and those who have neglected pruning trees and smaller plants requiring it should not delay the operation, although it may be put off with some kind until the leaves are fully expanded. But

there appear to be many erroneous ideas prevalent among those who have had little experience in plant culture, and the most common one is, that vines and trees require pruning only once a year, which frequently leads to severe losses both in fruit and vigor of the specimens.

A man, for instance, concludes that his old apple or pear trees require pruning, the branches having become too abundant for the free admission of light and air into the centre of the head, or because of the leading shoots having become too tall or the lower branches droop too much to admit of working the ground underneath. He, therefore, proceeds to thin out, cut back or trim up, severing large or small branches, as the case may require. So far, the operation may be performed in a judicious manner, but in the months following it will usually be observed that numerous sprouts will spring from latent buds near the point where a branch has been severed from the main stem or elsewhere, and if these are permitted to grow it is at the expense of those and other parts of tree; besides, in most cases they spring from the points where no shoots are desired, and will be removed at the next annual pruning. Examples of this kind may be seen in hundreds of orchards at any time during the Summer months, the vigor of the trees being wasted in these sap sprouts, as they are usually termed by farmers. Now, the proper course to pursue is to visit the pruned tree once or twice during the season, breaking or cutting off the surplus shoots while they are young, thereby forcing the sap into other channels.

We think those who have had any experience in the care of orchards will readily see the importance of this operation in connection with that of the regular annual pruning. Of course we do not assert that all trees require pruning every year, but if it is done, Summer pinching and rubbing off surplus shoots should always follow. If trees are properly pruned at the start followed by judicious care in Summer, there will be little need of removing large branches as they become old. A fruit tree should receive its first severe pruning at the time of planting in the orchard, and there is little danger of reducing the top too much.

The next period in the life of fruit trees when very severe pruning may be beneficial, is when they have reached an age of unfruitfulness, either in consequence of having been permitted to overbear or of neglect of pruning or culture. Old orchards which have become almost or quite barren may frequently be restored to health and fruitfulness by removing one-half of all the branches entire, and then shortening the remainder one-half, at the same time adding fertilizers to the soil. Considerable attention, however, will be requisite during the Summer in removing the young sprouts which will issue from the severely pruned branches. A few of the strongest should be permitted to grow, selecting those for this purpose which start at points where new branches are desired. Many of our old and now almost worthless pear and apple orchards might be restored by manuring and pruning combined. In removing large branches from trees, it is well to cover the wounds with grafting wax or some similar substances which will prevent the decay of the exposed wood.

What we have said above in regard to fruit trees is also applicable to grape vines. If pruned before cold weather is entirely passed, there will be little danger of bleeding. Summer pinching of the most vigorous shoots, as well as rubbing off the feeble ones which always appear in greater or less numbers upon all cultivated vines, are very important operations. Annual pruning of grapevines is generally conceded to be necessary, but the equally essential manipulation in Summer is far too frequently neglected; hence the numerous complaints of failure to obtain well ripened fruit or vigorous canes for use the following season. A few canes, and those of vigorous sturdy growth, are far preferable to a great number and all weak and slender. The former are seldom secured without attention in Summer, no matter how carefully the annual pruning may have been performed.

The lesson we would inculcate by the foregoing, is that the first steps in the improvements of plants calls for a corresponding care in their culture. The first pruning which may be considered as having been done at the time of taking the buds or coin from the parent stocks, makes a second in the life of the tree or vine necessary, because henceforward the plant is placed under artificial confinement.

The *Gardener's Monthly* says: "Basket plants often suffer from too much or too little water. If from too little the leaves curl or fall, and the plants have a dried up appearance. If too much, they

get yellow and drop off. As a rule, a basket in a warm room should be taken down once a week, soaked in a bucket of water, then drained and hung up again. Every day during the rest of the week a little water may be given the plants, and something put under to catch the drip. Some baskets have no provision for the escape of moisture. These are dangerous. Still some people manage to water closely, and do well with them. Fern cases do best when given a little sun; for, though ferns are supposed to grow naturally in shady spots, it is because there is generally a more humid atmosphere. If they can get this moisture they rather like light.

Michigan Horticultural Society— Grape Culture.

At the monthly meeting of this Association, in Grand Rapids, President Bradford read a paper on "Grape Culture," which he said was intended for those who love grapes, but have never raised any. He recommends trenching the ground to the depth of eighteen to twenty inches before planting, which costs from \$10 to \$15 per acre, but pays from 50 to 100 per cent. per annum. If trenching is dispensed with in small lots, where only a few vines can be planted, space may be economized by digging and enriching a strip two feet wide on one or both sides of the garden walk. If both sides are used, a space of two feet should be left between the rows. The rows should be left four feet apart, and the vines from four to six feet apart in the rows. The latter should run north and south, or better, southeast and northwest. With the vines planted four feet apart in a given space, the produce at the end of two years will be double the quantity yielded when the vines are planted six feet apart; at the end of the fourth year there may not be any material difference.

For early bearing, he recommended the selection of good two year old vines; those which have not been pruned and transplanted the previous year, are best. In planting, the roots should be exposed as little as possible to the sun and wind. If the vines are planted in the Fall, they must be protected by a covering of earth, or some other material. The holes for the vines should be eighteen inches in diameter, leaving the bottom after well loosening the soil, six or eight inches deep in the centre, and eight or ten at the circumference. Stakes from six to eight feet in length should be set in the ground just back of the centre of the mound.

Before planting, cut back the ends of short braised roots, and cut the long ones back to eight inches. Place the crown of the roots on the mound in the centre of the hole, and spread the roots out evenly all round; cover with two inches of fine, rich soil, put on and pressed down with the hand. Fill up the hole to a level of two or three inches above the crown. Horse or cow manure to the depth of one inch may be put on the surface.

Cut the cane back to two or three well developed buds, and when the shoots from these have made a growth of six or eight inches, select the best one and cut off all the others, as but one shoot must be allowed to grow the first season. This shoot is to be tied to the stake and the laterals, after making three or four leaves, must be pinched back to within one leaf of the base, and the seed laterals the same. At the end of October the young vine should be cut down to within twenty-four inches of the ground and laid down and covered. In Spring, after the frost is well out of the ground, the vine should be taken up and tied to the stake.

As soon as the buds start, rub off all except the four upper ones. Only two shoots are to be grown the second season. The reason for allowing four buds to make a short growth is that in case of accident to the upper shoots their places can be supplied by those from below. After the upper ones are long enough to be tied to the stake, the lower ones may be rubbed off. The two shoots are to be treated like the single one of last season, by pinching off the laterals, etc., and at the end of August the tops of the shoots should be pinched off, to make them more stocky, and to ripen the wood.

In October there will be two canes ready for the formation of arms. If the vines have been planted four feet apart, cut the shortest cane back to within four feet of its base, for the lower arm, and the lower cane to within six feet of its base for the upper arm. If the vines were planted six feet apart, the canes should be cut three and four feet respectively. If the ground is lower at one end of the row than at the other, commence at the