

the cost by half over digging by hand, and is at least as cheap as any machine can do it. My experience of cost is, that with the lateral drains 2 feet 6 inches deep, with clay subsoil, sandy top soil, and with the mains of varying depths, sometimes running through ridges 4 to 5 feet deep, the average cost of laying eleven miles of tile, which we laid one season on one of my farms, was 20 cents per rod. This included all labor, but not the cost of the tile. The tile itself cost about \$7.00 per thousand for 2-inch, \$9.00 per thousand for 2½-inch, and \$11.00 per thousand for 3-inch, at kilns here. So far as laying the tile, we have never used any instruments, but have always tested with water when in doubt; it is safe and sure, and does not cost much. For many years I laid all the tile myself, but I got a real good, steady, honest man thoroughly drilled into the job, and he has laid all my tiles since that time. It is a job that cannot be trusted to a dishonest man. The laying of tile carefully and correctly is the whole essence of the matter. One tile out of place, or a depression in the fall below the level, of course, reduces the size of the tile by just that much, as the depression will immediately fill up with silt. E. D. SMITH.

Wentworth Co., Ont.

Pruning Fruit Trees.

By Linus Woolverton, Grimsby, Ont.

THE APPLE (Continued).

PRUNING FOR FRUIT.—In the bearing orchard, the great object in view is, of course, the production of fine fruit, and plenty of it. The neglected orchard yields only scrubs, and is a loss to the owner and an eyesore to passers by.

The importance of thorough pruning, in order to produce good fruit, has impressed itself more than ever upon me of late, by observing the difference in quality between the fruit borne in those parts of my orchard thoroughly pruned, and that from the trees which had been neglected. I believe that sunshine has an influence on the formation of fruit buds, as well as in painting the cheek of the apple with brilliant carmine; therefore, it is that too much brush wood on a tree is like weeds in a garden, which choke it and make it unproductive.

To thin out all parts of a tree equally needs patient and careful work. It is easy enough to go from tree to tree, cutting out here and there a large limb, and flatter oneself that the work is done. But, alas! it is not done at all, there is simply less tree remaining than before the cutting. It is quite another thing to go over the bushy tops and thin out the smaller boughs until each has room to mature its share of leaves and fruit.

The best tools for pruning are: (1) A double-edged pruning saw, with a coarse and a fine edge. This, if kept well filed, will do quick and effective work. (2) A pair of pruning shears, with short handles, which are especially useful for thinning out young wood. (3) A pair of grape pruning shears, for thinning out the smaller extremities. Armed with such tools as these, a man will go over a good many trees a day, especially if the work is done annually, as indeed it should be.

A great mistake is made by some pruners, by cutting off all the fruit spurs along the main limbs. In my opinion an apple tree should bear fruit on all parts of its surface, from the trunks to the outer branches; and if the main limbs are covered with fruiting spurs this will be the case. If these are removed, they cannot be easily replaced. They can be easily recognized, from their slow, drooping habit of growth, in distinction from the upright habit of the so-called sprouts. These latter need not all be removed either, for if there is an open space one should always be allowed to fill it, and in a year or two these vigorous young sprouts will produce the very largest and finest apples. I had this experience once in my old early harvest apple orchard, which was planted by my great-grandfather in 1798. The old limbs were much riddled by the red-headed woodpecker, which was either searching for borers or was fond of the sweet sap beneath the bark. In some instances large limbs were almost girdled by the holes made by this bird, and, as a result, vigorous young sprouts began to grow from below the injury. Some of these I permitted to grow. In a couple of years these were the finest portions of the tree, and yielded the very finest harvest apples, many of them double the size of those borne on the old wood.

An additional reason for close pruning is found nowadays in the necessity of spraying. We have fungi and insects both to fight if we would succeed in our work, and we must spray with lime, sulphur, whale-oil soap, Bordeaux, kerosene emulsion, etc., etc., if we would grow fruit of the best quality. Spraying is not worth very much unless every inch of wood is covered with it, and if head of a tree is a dense mass of brush, how can you reach every part; besides, what a waste of time and material there is if a lot of unproductive and useless wood be left to be covered with these expensive mixtures?

So important have these operations become, that our co-operative fruit-growing companies have, in some cases, made it a rule that every member must properly prune and spray his orchard, or he must lose the privileges of the company.

THE PEAR TREE.

Since the pruning of the standard pear is somewhat similar to that of the apple, we may speak of it in the same connection.

As a rule, the top should be formed lower than that of the apple tree, because of its upright habit of growth. For the Bartlett, the Tyson, the Buffum, the Gifford, the Louise, varieties more or less upright in habit, I think three feet of trunk will bring the top high enough to be well out of the way in tillage. In the case of some other varieties, which are more spreading, such as Flemish Beauty, Anjou, Boussock, Diel, etc., perhaps four feet, or even five, might be advisable, according to the after treatment of the branches.

Heavy pruning of the pear tree should always be avoided, because it is followed by young and succulent growth, which seems to favor the attacks of the blight.

The chief work in pruning the pear is to thin out the top, so that it may not be too thick, and to prevent limbs from crossing each other. If any of the limbs grow too long without sending out side branches, or if the tree is reaching up too high, all such limbs must, of course, be topped, so as to keep the tree within proper bounds; otherwise, a standard pear tree will need less pruning than an apple tree, and may be allowed to follow pretty much its own habit of growth.

The fire blight has always been the terror and the despair of pear-growers. In a most unaccountable way it suddenly attacks the finest pear trees, the pride of the orchardist, and leaves them looking as if scorched by fire. Of late scientists tell us that one means of carrying the germs is the visits of bees in blossoming time, taking them from the flowers of a diseased tree to the flowers of a healthy tree. If this is so, pear-growers should be most careful at this season of the year to cut out all blighted or half-blighted wood from their trees. The blackened bark is easily discerned, and often traceable much farther than first supposed. This should be cut off about a foot below the lowest trace of blighted bark, so that no diseased wood may escape. The prunings should not be left to lie and scatter their spores, but should be gathered and burned.



Fig. 1—A Dwarf Pear Tree.

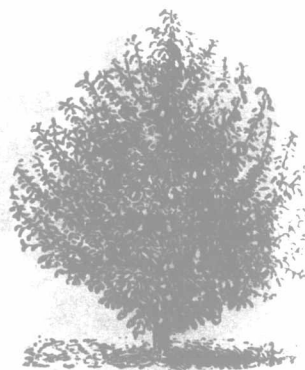


Fig. 2—Dwarf Pear Tree in Fruit.

The Dwarf pear tree needs different treatment from the Standard. It is budded on the quince root, a slow-growing stock, which needs encouragement by close pruning, and in some cases by potash or phosphate fertilizers, but seldom by nitrates. The quince root being a surface feeder, and not rooting deeply, is another reason for close pruning, for if the top reaches up too high the whole tree may be uprooted and blown over by the winds. Besides, I think that close spur pruning of the dwarf pears tends to improve the size and quality of the fruit, for while close pruning of a standard would result in too much wood, the same treatment of a dwarf only gently stimulates the wood growth, and imparts the energy thus conserved into the fruit buds as well.

I am trying to train all my dwarf pears to the pyramidal form, because it makes a beautiful and a symmetrical tree. To do this it is, of course, necessary to begin with a young tree from the nursery that has been allowed to branch from the ground. Indeed, it is always best to buy a dwarf pear with branches well formed.

By careful pruning with the grape pruning shears each year, the young dwarf pear tree may, in a few years, be made to assume somewhat the form shown in Figure 1.

In addition to shortening back the main limbs to keep the form shown, the leader must be topped at the proper height, and thus the tree will not increase very rapidly in size. The laterals should be cut back to within two or three fruit buds of these main limbs—more or less, according to the size and vigor of the tree. A well-proportioned dwarf should have its diameter about two-thirds of its height.

A dwarf pear orchard, pruned in the pyramidal form, will be an attractive feature of the orchard or fruit garden, which the owner will have pleasure in showing his friends, and inviting them to partake of the luscious fruit.

From the results obtained on 100 trees, set apart since 1902 by the Maine Experiment Station for specific experiments in old-orchard renovation, the Horticulturist, Prof. W. M. Munson, feels warranted in stating that, with proper care and food, there need be no "off year," even with Baldwins. As might be expected, better results were obtained from the application of a complete fertilizer than from the use of any one or two of its separate components. The severe winter of 1904-5 injured many trees, but where good cultivation and feeding are practiced the trees are rapidly recovering.

Southern Ontario Fruit-growers.

Editor "The Farmer's Advocate":

The fruit-growers in that important fruit belt between Hamilton and Grimsby have organized themselves into an association, under the above title. Mr. Jonathan Carpenter, of Winona, was elected president, and Mr. Egbert Smith, Secretary-Treasurer. The directors are to be representative; instead of being elected by the meeting, they are to be elected by local clubs of not less than ten members. The membership fee is 50 cents per annum. The object is to discuss problems of practical interest to fruit-growers.

The first meeting was held in the new hall at Stony Creek, on Friday, February 23rd. "Peach Culture" was introduced by Mr. Wesley Smith, of Winona; "The San Jose Scale," by Mr. Smith, an official of the Department of Agriculture; and, "Grape Growing and Pruning," by Mr. L. Woolverton, of Grimsby.

The second meeting was held at Grimsby, on Friday, March 2nd. At this meeting much time was spent discussing practical questions, such as "Transportation of Fruit, Both Express and Freight"; "Sizes of Baskets and other Fruit Packages"; "Co-operation Among Fruit-growers," and other subjects. Mr. H. L. Roberts, of Grimsby, outlined a very practicable scheme, looking to small local organizations of fruit-growers, which in time might themselves co-operate, and thus avoid the present reckless method of selling fruit on commission, by which the grower is the constant loser.

This Association promises to be one of the strongest and most influential in Ontario, being composed of some of the most progressive and best-informed fruit-growers in the fruit district.

L. WOOLVERTON.

POULTRY.

Get Ready for Spring.

These are days when the farmer is getting ready for the breeding season. There is no better time than the present for preparing for a thorough cleaning of the poultry premises. As far as possible every crack should be cleaned out, and all dust swept down. The litter should be removed, and if any suggestion of foul smell remains, abundance of lime should be used. The roosts should be taken down and scalded, and the dropping boards thoroughly cleaned. Then the whole premises should be carefully sprayed with coal oil. A good hand spray answers this purpose very well, provided the operator is careful to see that the oil reaches every crack and cranny. This done, the whole henhouse should be carefully whitewashed with the best of new lime. The hens themselves will be the better of an occasional dusting with sulphur. These precautions are recommended on the principle that an ounce of prevention is worth several ounces of being sorry that dirt and disease have come with the warm spring days. Then, again, it will be wise for those who use incubators and brooders to look their machines over, and test them, so that there will be no disappointment when the time comes for their being put to use. Those who still use hens for brooding purposes should see that nests are ready against hatching time. If one intends hatching eggs from his own flock, it will be well to separate the cockerels from the hens till a short time before fertile eggs will be in demand. If eggs from another flock are sought, they should be spoken for, in order than an early hatch may be secured. The poultry business yields a fair profit, provided care is taken and judgment is used. If one aims to have his hens lay next December, this is the time to make preparations.

C. J.

Believes there is Money in Ducks.

For the second year we have given considerable attention to ducks, having raised during the season some 200, some of which were sold as dressed birds, and a number of which were kept for breeding purposes. White Pekin, Indian Runner and Rouen are the breeds which we have at present. The demand for "green ducks" in Nova Scotia is yet rather small, but it is a growing one. As there are no birds which grow more rapidly, and no more economical feeders, we are decidedly of the opinion that it will pay to raise a much larger number than have heretofore been raised in our Province. We marketed the most of our birds when they were ten weeks old, at which time they averaged in weight from 4½ to 5 lbs. Many persons believe that ducks cannot be successfully raised unless they have access to a pool or running stream. That this is a mistaken idea, the writer ascertained for himself when he visited a farm in Massachusetts where some 3,500 ducks were raised annually, and yet there was not a stream or pool of water within a radius of three miles.—J. P. Landry, Poultry Manager N. S. Agricultural College, in his 1905 annual report.