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THE

Canadian Horticulturist

VOL. XVI. 1893 No. 4.

FORSYTHIA, OR GOLDEN BELL.

HOW wisely planned are the works of nature! Fruits in succession from June; flowers in succession from May! Among the first blossoms in the spring is the Forsythia, a shrub which opens its solitary golden flowers, in this latitude, in the month of May. It is a native of Northern China, from whence it was brought to England in the year 1845, receiving its English name in honor of a former gardener of the king at Kensington, by name Wm. Forsyth, who died in 1864. Botanically it belongs to the Olive family (Oleacæ), of which the only native representative in Canada is the ash. It is a dwarf, hardy shrub, of dense spreading habit, which needs a little cutting back in the spring to keep it in good shape; some gardeners advise cutting back the last year's growth to within a few joints of its base. Its yellow drooping flowers appear, in advance of the foliage, on its willowy stems, which may be used in vases.

Gardeners make three varieties, viz., Fortunei, Suspensa and Viridissima, but these distinctions are not very marked. The first, perhaps, is the best variety, but the last-named is very attractive on account of its bright green foliage all through the summer, which hangs most persistently in autumn.

The Forsythia should not be dotted about everywhere in the yard, as they show to best advantage as single specimens in some distant corner, or grouped together on the green lawn. They also work in well with other shrubs, serving to enliven the effect of the whole.

HOW TO SUCCEED WITH ROSES IN CANADA.—I.

PREPARATION OF THE GROUND.

SHOULD circumstances permit, let the rose bed be situated where the soil is a clay, or a clay loam, as roses invariably attain to the greatest perfection in a somewhat heavy soil. But if the soil is a sandy loam, good roses may be had by observing the following precautions; the most important being to carefully mulch the surface of the bed during the growing season, the object being to keep the roots cool. It is of great importance that the soil be not only dug deeply and well pulverized, but it should be thoroughly well dressed with rotten manure—we prefer that from the cow stable.

PLANTING.—It is desirable, if planting a number of roses, to group them; when thus planted they can be more easily cared for than when scattered throughout the garden, and the effect produced when in bloom, is decidedly better; each variety tending to enhance the beauty of its neighbor by comparison. If the roses to be planted are of the Hybrid Perpetual class, dormant, not grown in pots, and budded or grafted, we would advise that the roots be first dipped in a thin puddle of clay (or other soil) and water. In planting, set the rose with the graft or point where the union has been made, about four or five inches below the surface. Many varieties will at once emit roots from above the graft, and the Manetti root, upon which the rose has been grafted, being thus rendered useless, will very frequently soon decay, leaving the plant virtually upon its own roots. We may say that we find this to be the case more particularly with strong growing varieties. Fill in carefully so that every part of the roots come in contact with the soil, press down firmly and finish by raking the surface. This class of roses, together with the large sizes of Mosses and hardy climbers, are better planted as early in spring as the ground can be had in nice condition; or if in the fall, from the latter part of September throughout October. Roses that have been grown in pots may be planted at any time during the growing season, care being taken to saturate the earth about the roots before planting and to prevent the ground from becoming dry. Should the weather be hot, shading for a time will be required.

CLASS OF ROSES TO PLANT.—Although the Hybrid Perpetual roses are commonly called hardy, and the Tea, Bourbon, Noisette and Bengal are known

as tender, the distinction is not accurate, for many of the latter classes will endure the winter as well as some of the more tender among the Hybrid Perpetual class. Let not the rose fancier be deterred from planting the so-called tender roses because they are not entirely hardy. For years we have wintered them outside without protection, and we also succeed perfectly by lifting them in the fall and packing them away in an out-building. It is not necessary to keep them from freezing, but simply to preserve a uniform condition through the winter, avoiding too much moisture, as this condition may develop fungus, which would injure the plants. As a rule, while the hardy roses receive a check when transplanted, the Teas may be lifted each fall, wintered in safe quarters without artificial heat, and again planted out in the spring, with the certainty of roses in abundance throughout the summer. We would not wish our readers to suppose that we would in any measure slight the Hybrid Perpetual as a desirable class for every garden, but simply to advocate the claims of the ever-blooming classes.

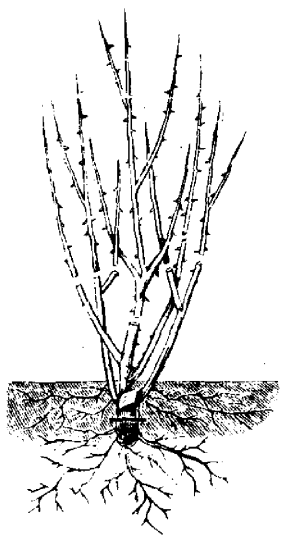


FIG. 523.—Showing depth to plant and how to prune budded Roses.

PRUNING.—Hybrid Perpetual roses should be pruned in the spring, when growth has nicely started, because if pruned too early and vegetation is checked by a cold day or night, the sap will fail to reach the extremities of the canes and it will be necessary to again prune back two or three buds, or leave unsightly dead ends on the canes; by delaying to prune till the weather is settled this trouble is obviated. A good rule to observe, in pruning Hybrid Perpetual roses, is to trim the weakly growing varieties back closely, while those of a stronger growth should not be cut so close.

The accompanying cut will give a good general idea as to planting and pruning. Mosses require only to be slightly shortened and the oldest of the canes removed, also any weakly growth cut away. Hardy climbers require the old wood removed, as it loses vigor, together with a judicious thinning out of young wood, cutting away what cannot be neatly tied into place. The tender or ever-blooming roses require a method of pruning peculiar to themselves. In the spring they should be carefully pruned, all dead or weakly wood being removed, and from time to time during the season, as blooms are cut, the wood should be shortened to a strong eye with a view to induce the growth of strong shoots from near the ground, or even from below the surface. This wood will be found to produce the finest roses.

DISTANCE TO PLANT.—Young ever-blooming roses, if planted in masses,

may be set for the first season 9 or 10 inches apart; as they increase in age and size they will require more space. Hybrid Perpetuals, during the first year, will do nicely at 12 inches apart, taking out and replacing elsewhere every alternate plant the second or third season. The strong two-year-old budded Hybrid Perpetual roses that we supply will require at least 2 feet apart each way.

Hamilton, Ont. WEBSTER BROS.

FRUIT FERTILIZERS.

ECONOMICAL manuring implies the applying of elements needed for plant growth that are deficient in the soil. Ordinarily in average soil all that will be necessary to furnish is nitrogen, potash and phosphoric acid. It is often the case that there will be plenty of one or two of these, while in others all may be needed in order to secure the best results. Generally, in applying stable manure, we supply all of the elements needed. The objection to using much stable manure in the orchard is the tendency to produce too strong a growth of wood. This is rather more the case with a young orchard than after it has once become well established. For this reason, says Western Plowman, it is often the case that in what may be considered a fairly rich soil, strong stock manure often proves almost as detrimental as beneficial, and especially so when it contains a considerable per cent. of nitrogen. Phosphoric acid and potash are generally more needed than nitrogen. It is, therefore, largely for this reason that wood ashes and ground lime, or bone meal, can be applied to many varieties of fruits to a better advantage than fresh stable manures. If there is any difference to be made in applying the different kinds of fertilizers to different varieties of fruits, apply ground lime to the peach, cherry, and pear trees, and the wood ashes to the apple, as phosphoric acid is most needed by the first-named, and potash by the latter, but either will be beneficial to a more or less extent by the application of the other. Grapes, and in fact, all varieties of small fruits, are benefited by an application of bone meal. In all cases it is necessary to apply this fertilizer in a form that can be readily worked into the soil. One of the advantages in using either ashes, or bone meal, is that they are more readily soluble, and, in consequence, are sooner available than the average stable manure. So far as is possible, the wood ashes should be applied to fruits, both vine and tree, and if the soil is not naturally rich, stable manure may be used. But when there is a free supply of nitrogen in the soil, the most economical plan of supplying the other two ingredients, or essentials, is by using bone meal and wood ashes, using stable manure with other crops.

WESTERN NEW YORK FRUIT GROWERS.—II (*Concluded*).

HE *Pear Tree Psylla*, of which an account is given elsewhere, was mentioned by some prominent fruit growers present as one of the worst enemies of the pear. No remedy was known until this year, when Mr. Slingerland, of the Cornell University, issued a bulletin of his experiments.

The subject of the *Cold Storage* house for keeping fruit was well discussed. Mr. Hale said that, in Connecticut, some growers, who had had eight years' experience with cold storage, had come to the conclusion that there was not much advantage in it, except for Bartlett pears. Sometimes, by prolonging the season of marketing the Bartlett, it was possible to handle them to much better advantage, and sell at much higher prices. On the whole, the opinion of the meeting was that there was money in the cold storage house for keeping fancy apples for a fancy market. We think it is quite evident to apple growers in Canada this winter that, had we first-class cold storage houses in which the best apples could be kept in prime condition until the month of February, or March, and then sent forward to the British markets, great advantages might be gained. Even now, February 14th, the prices of Canadian apples are rapidly advancing, and those who were so fortunate as to have suitable fruit to send forward will receive ample reward for their trouble.

Mr. Bailey's opinion was, that the cold storage house would be very useful in any city where fruit is to be sold, for then the fruit could be placed on the market just when it was most wanted, and when outsiders have difficulty in reaching the market with their fruits. Apples handled in this way have frequently brought as high as $4 and $5 a barrel in the Chicago markets, in the months of February and March.

Speaking of *Japan plums*, Mr. Willard said that the Botan (Abundance) ripened about the 20th of August. All the Botans have yellow flesh. The Burbank is the most productive of the lot; he had seen branches loaded at about the rate of one hundred plums to a square foot. The fruit is carmine on one side and yellow on the other, of medium to large size, and ripens about the 10th of September. In New England the Botan, Burbank and Satsuma have proved the most hardy in wood, and have, so far, shown no trace of black knot; and the fruit is very attractive. The Satsuma is a round plum, deep carmine, and deep red all through the flesh. These three will no doubt prove valuable for market. They are long keepers, which is an advantage over the English varieties; some samples of the Satsuma kept in good condition for two weeks after they were gathered.

An elaborately written account of the terrible ravages of the *Gipsy Moth* was given by Prof. Lintner, Entomologist, Albany. He said that it had not entered New York State, but had given much trouble to the fruit growers in Massachusetts, having been accidentally introduced in the year 1869. The amount which, up to the present date, has been expended in the State of Massachusetts is $175,000, and the annual appropriation is $50,000, and it is hoped that in a few years this insect will be entirely exterminated; for, should it elude their diligence and escape into other States, it would be the most terrible enemy with which we would have to contend.

In speaking of the *Rose Leaf Hopper*, erroneously called Thrip, he said that for some time after hatching, the young are found on the under side of the leaves, and at that time are easily destroyed by spraying with kerosene emulsion, diluted with 15 per cent. of cold water: but if they are left until winged, it is almost impracticable to destroy them.

A simple remedy for the cabbage worm is soft soap suds.

In using Paris green for moths on our apple trees, he was of the opinion that a pound to 250 or 300 gallons of water would prove sufficient to destroy them. He recommended also the use of the dilute Bordeaux mixture, in conjunction with Paris green, to prevent injury to the foliage.

"*Fertilizing the Apple Orchard*," was a paper prepared by Prof. Roberts, but which, in his absence, was presented by Prof. Bailey. Some of the points were: First, that the fertilization of the orchard is the foundation of success in growing apples. Second, that tile draining was an aid in unlocking the plant food which already existed in the soil, thus increasing its available fertility. Third, that barn manure was suitable, but it was not well balanced in composition, being too rich in nitrogen in proportion to the mineral matter contained. In using chemical fertilizers, a sufficient amount of nitrogen would be furnished by an occasional crop of clover. Fourth, an important point was to keep the surface of the ground covered with vegetation late in the season, for this will keep the soil loose and moist, and besides it is important to keep the ground cool during the ripening of the fruit. This late growth should be left on the ground as a protection during the winter time. The vetch is the ideal plant for this purpose, if sown in July, being rich in nitrogen. The seed can be purchased for $1.50 per bushel, and a bushel will sow an acre. Fifth, another point was the encouraging of the growth of windbreaks.

Mr. Hale said he did not believe in having ground bare during the winter, and he thought the point made in the professor's paper an important one. He always made a point of having a late sown green crop in order to keep the ground covered during the winter. In answer to a question as to whether this is not contrary to the advice lately given, that the ground should be ploughed in the fall in order to expose the soil to the action of the air during the winter, Prof. Bailey said, that, while he believed in fall ploughing for benefit to the soil, yet

he thought that in most cases it was best to keep the ground in the orchard covered during the winter time. The vetch and buckwheat are especially suitable, because they draw moisture from the atmosphere, and do not cause the ground to dry out. One person present said he had great success in sowing clover and buckwheat together, the shade of the buckwheat favoring the catch of the clover. Mr. Munson, from Maine, said that, in his State, it was generally necessary to have the sod in the orchard for the purpose of winter protection.

An interesting address was given by Prof. Waite, of the Department of Agriculture, Washington, on "*The Sterility of Blossoms.*" He had made very careful experiments and found that the Bartlett, Clapp's Favorite, Winter Nelis and Anjou would not fruit when the blossoms were covered with bags and thus protected from the visits of insects. This proved that these varieties are not capable of being fertilized by their own pollen, and require the pollen of other pears to be brought them by the visits of insects. The Bartlett, especially, was proved, by repeated experiments, to be completely useless in fertilizing itself; and to cause the blossoms to produce fruit it is necessary to use the pollen of such varieties as Clapp's Favorite, or Anjou. For example, the blossoms of the Bartlett fertilized by Bartlett, were found to produce no fruit at all; when fertilized with the pollen from the Anjou, 77 per cent. yielded fruit, and when fertilized with Clapp's Favorite, 76 per cent. of them yielded fruit.

Basic slag was referred to by Prof. Fairchild, of the Cornell University, as an article soon to come into the markets as one of the most economical forms of a phosphate fertilizer. In action it is slower than nitrates, and not so easily acted upon by the rain, and it is, therefore, necessary, in using it, to plough it under the ground. It contains only one element, and, therefore, would do its best work in connection with nitrogen and potash. It needs to be applied more freely than superphosphates, perhaps double the quantity.

Insectivorous Birds.—It is well to remember and protect this class of birds, as they specially benefit the farmer and gardener. The following birds (and the list should be published annually) are to be classed among the most helpful kinds in a general warfare against insects: Robins—cut and other earth worms; swallows, night-hawks and purple martins—moth catchers; pewees—striped cucumber bugs; wood thrushes and wrens—cut worms; catbirds—tent caterpillars; meadow larks, woodpeckers and crows—wire worms; blue-throated buntings—canker worms; black, red-winged birds, jays, doves, pigeons, and chippies—strawberry pests: quail—chinch bugs, locusts; whip-poor-wills—moths; hawks, all night birds, owls, etc., tanagers, and black-winged summer red birds—curculios. There may also be mentioned the following insect pest destroyers: Nut crackers, fly catchers, chimney swifts, indigo birds, chipping and song sparrows, blackbirds, mocking birds, and orchard orioles.

SUGGESTIONS REGARDING SPRAYING.

HOW TO SPRAY.

AS the treatment is entirely preventive, in order to make spraying effective it must be commenced early. All parts of trees or plants must be reached with the preventive agent. Drenching is not necessary, and is expensive. A film or coating of the fungicide deposited upon the foliage will prevent the development of the spores as well as a complete soaking; but it is important that all the leafy surface should be wetted at least on the upper side. For orchard work a good force pump, which may be fitted into a barrel—side or end—will give satisfaction. It must be of sufficient strength, and fitted with a nozzle which will project the spray in a fine state of division, yet with sufficient force to enter the deeper recesses of the foliage. More expensive pumps drawn and operated by horse power may be purchased, but are seldom necessary except for large orchards. The Vermorel nozzle is a very satisfactory instrument for distributing the liquid.

CO-OPERATIVE SPRAYING.

Some factors which act as deterrents to the progress of spraying may be enumerated as follows: This work, like the introduction of spraying for the prevention of insect enemies, on account of involving new lines of thought and action, is sometimes regarded by the farmer as impracticable on a large scale. It *must* be done at certain periods of the year—otherwise it is ineffectual. It involves the purchase of implements and material which are sometimes difficult to obtain just when required. The success of the work depends also on intelligent adaptation of the treatment to the climatic conditions existing during the spraying period.

To obviate some of these difficulties I would suggest the adoption of a co-operative plan of spraying.

First, where orchards are not large, a few farmers might combine and purchase a spraying outfit, which would serve the community, and if it were possible to have it continuously operated by the same individual, whom practice would lend superior facility in using it, an additional advantage would be gained. Another arrangement could be made as follows:

A complete spraying outfit, including chemicals, might be purchased by a

person who would be prepared to spray under contract, by the acre, or at a stated figure per tree. If this system of combating fungous and insect enemies was introduced, it would obviate much of the prejudice and inconvenience now connected with the work, and spraying would probably in a few years, to the great benefit of orchardists, become the general practice.

SPRAYING MIXTURES.

1. *Diluted Bordeaux Mixture.*

Copper Sulphate	4 lbs.
Lime	4 lbs.
Paris Green	4 oz.
Water	50 gallons.

This may be prepared by dissolving, in a barrel, four pounds of powdered copper sulphate. In another vessel slake four pounds of fresh lime with as many gallons of water. Spread a piece of coarse sacking, held in place by a hoop, over the top of the barrel in which the copper sulphate has been dissolved. Strain through this the creamy mixture of lime and water. Paris green may then be added, after which the barrel should be filled with water. This forms an excellent insecticide as well as fungicide and therefore useful to destroy codling worm, bud moth, and canker worm. It should be used soon after being prepared.

2. *Ammoniacal Copper Carbonate.*

Copper Carbonate	5 oz.
Ammonia	2 qts.
Water	50 gallons.

This is more expensive than the former, is more easily applied and is used as a substitute, especially in the case of grapes, where the Bordeaux mixture might, by adhering to the fruit, injure its sale.

It is prepared by dissolving the copper carbonate in the ammonia and diluting with water to fifty gallons. The concentrated solution should be poured into the water. Care should be taken to keep the ammonia tightly corked in glass or stone jars.

TREATMENT OF APPLE AND PEAR SPOT.

1. Before growth begins in spring, spray with a solution of copper sulphate, 1 lb. to fifty gallons of water. On no account should this be applied after the foliage has appeared, as it will severely injure it.

2. Just before the blossoms open spray with diluted Bordeaux mixture (No. 1). Repeat this after the blossoms have fallen, and make a third application two or three weeks afterwards. If the season is wet and rainy a later application may be advisable.

GRAPE DISEASES

Downy Mildew, Blackrot, Anthracnose.

Spray the canes with copper sulphate 1 lb. to 50 gallons before growth begins. Follow this solution with diluted Bordeaux mixture (omitting Paris green) or ammoniacal copper carbonate immediately after the fruit sets. Repeat at intervals of three weeks, till the bunches begin to color. Ammoniacal copper carbonate should always be used for the later applications.

PLUM AND PEACH ROT—(*Monilia.*)

Without being fully tested the following course of treatment is recommended for trial. Spray as soon as the fruit sets with sulphate of copper 3 ozs. to 45 gallons; follow this with diluted Bordeaux mixture to which Paris green has been added, for the purpose of checking attacks of the curculio. If rot develops late in the season, as is sometimes the case just before the ripening of the fruit, spray again with sulphate of copper solution, or ammoniacal copper carbonate.

GOOSEBERRY MILDEW.

This disease can be effectually treated by using either ammoniacal copper carbonate or Bordeaux mixture (No. 1), but as potassium sulphide (liver of sulphur) serves the same purpose, is somewhat cheaper and more easily prepared, it is therefore recommended here.

Treatment should commence with the first signs of growth and continue at intervals of ten or twelve days till five or six applications are made.

Horticulturist, Central Experiment Farm. JOHN CRAIG.

THE NIGHT-BLOOMING CEREUS.

Like one enchanted, waiting in dark tower
The "fated fairy prince" to break the spell,
A sheath-hid bud all day did darkly dwell.
No morning breeze had kissed it into flower,
Nor had it freedom found through sun or shower:
World-hidden as a nun in cloistered cell.
Vainly the bold bee strove its sweets to tell,
A star in daylight veiled, it bode its hour.
At evening's dusk a mist-pearled moonbeam came:
By love-light wakened, swift the flower soul thrilled.
Slipt its dream robe, shone forth in life fulfilled!
Folding snow petals back from heart of flame,
In sweet amaze it perfumed all the air,
To find itself so blest, the world so fair.

—E. P. WELLS, in *McMaster Monthly.*

PROPAGATION AND PRUNING OF CURRANTS.

THE rules for the propagation of the gooseberry may be applied to the currant. For the purpose of making well-formed bushes the cuttings should be fifteen inches long, and all buds carefully taken out, excepting the three at the upper end. The cuttings should be inserted into the soil six inches; there will then be left from four to five inches of clean stem between the surface of the soil and the first branches. If the cuttings are planted in the fall, the three buds that are left will each make a growth of at least eight or ten inches during the following summer. At the fall pruning these shoots should be cut back to two buds each; from these, two more shoots will be formed the next season, thus forming a bush of six branches. These branches should all be cut back at the winter pruning, so as to leave them from four to six inches long, being always careful to cut back to an outward bud. Each terminal shoot should be cut back, at the winter pruning, until the required height is attained, which need not exceed three feet. If the soil is rich and the bushes make strong growth they may be permitted to grow to a height of four feet. All laterals that are thrown out from each main branch should be cut back to two buds, at the winter pruning. It will be found when the laterals are treated in this way, that fruit spurs will be formed throughout the whole length of the main branch. The object in cutting to a bud pointing outward, is to encourage the bush to form an outward growth. Under this treatment, work among the bushes will be found much more convenient, and better fruit will be produced. There will be an abundance of leaves and laterals formed each year, to shade the fruit from the direct rays of the sun; thus the gathering of the fruit will be made much easier, and a better appearance given to the plants.

The accompanying cut Fig. 524, shows the manner of pruning and the position of the fruit buds on the main branch.

Fig. 525 represents a branch of the currant in its natural state, with but few fruit spurs. It will be readily seen that the plant has to produce a great amount of wood which should go to the production of fruit, if pruned as in Fig. 524.

FIG. 524.

This system of cultivation has been used at this Station, and has proved very successful. It will be understood that the system referred to above does not apply to the treatment of the black currant. It is practiced only with the white and the red varieties. The fruit of the black currant is produced on the one year old wood, and consequently it must not be spur-pruned. Simply thin

FIG. 525.—NATURAL GROWTH OF THE CURRANT.

FIG. 526.—THE ABOVE PLATE SHOWS THE FRUITING OF THE CURRANT WHEN TREATED AS IN FIG. 524.

out all wood that has already fruited and leave the young wood for the production of fruit the following season. This treatment encourages it to produce a strong growth of young wood each year.

NOTES ON CURRANTS.

Fay's Prolific.—Color dark red; produces large clusters; is less acid than the cherry. The only objection to it, is that it produces a large number of seeds which injures it for preserving.

Cherry.—Color dark red; very large; the bush makes a strong growth; is very productive, and of good quality.

Red Dutch.—Color dark red; this variety is well known, but has been superseded by the larger varieties; but for preserving purposes it is valuable.

White Grape.—This is a very large variety, the largest of the white. The habit of the bush is to spread. It makes a strong growth.

Yellow Transparent.—Color, yellowish white; of excellent quality; good for table use, and for preserving.

La Fertile.—Color whitish-yellow: acid to sub-acid in flavor; many-seeded; small clusters; large; productive. Bush a free grower.

Victoria.—Color, bright red; clusters of medium size. Fruit hangs a long time on bush. Its buds do not commence to grow so early as other varieties by two weeks, thus protecting it from late frost. The bush is not quite so strong, resembling the cherry currant in growth.

La Versaillaise.—In all respects the same as the cherry; produces large clusters, and is very productive and valuable.—GEO. COOTE, *Horticulturist, Oregon Experiment Station.*

Oil of Sassafras—In making this only the green roots are used. They produce about 2 per cent. of oil, which sells at 35c. to 45c. per lb. to wholesale druggists. Twenty-five cents per 100 lbs. is the usual price for digging and washing the roots ready for distillation. Much oil is distilled in North Carolina, chiefly around Greensboro and Statesville, where they also make oil of pennyroyal. Any means of passing live steam through barrels of chopped and bruised roots, and thence through a worm or condenser of some sort, will make the oil. The business is not nearly so remunerative as it was ten years ago. Oil with a specific gravity of 1070, or over, finds a ready market.—Farm and Home.

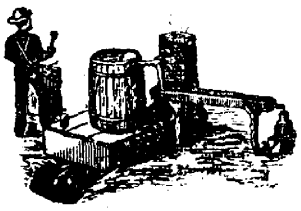


FIG. 527.

GRAPES IN QUEBEC.

THAT outdoor grapes can be successfully raised in this Province has of late years become an established fact, yet, from a commercial standpoint, the large influx of fruit sent to us from the south and west, ventures in that direction are impracticable. But for home supply, latterly the introduction of earlier varieties has wonderfully stimulated the production here. Most every one desires to "have grapes in the garden," and the measure of success depends on the attention given to methods insuring early ripening and well developed fruit. These conditions observed with a few well selected varieties, the table can be supplied with this delicious and healthful fruit from August till spring. If a man is blessed with industrious and intelligent boys, their interest may be enlisted in helping to look after the vines, their acuteness of observation will soon master the most important points necessary to success. In lower latitudes grapes will flourish with much less care; here we are obliged to force results and adopt measures in the treatment of the vine that will confine the energy to the development of the fruit, within a reasonable quantity; restricting the growth at a suitable time to insure strong buds on the canes desired for next year's fruit.

Through the labors of the late Charles Gibb, B.A., in organizing Fruit Growers' Associations, exhibitions, etc., a great amount of information has been obtained in the culture of this and other fruit. He encouraged experimental efforts, resulting in the trial of over 150 varieties of outdoor grapes, half of which number are still under cultivation at Clarenceville. This work is now done at the Central Experiment Farm of the Department of Agriculture, at Ottawa, under the very able management of Prof. John Craig.

The varieties in general cultivation in this Province are, in Blacks: Moore's Early, Hartford, Worden, Early Victor, Barry, Herbert and Champion. Reds: Massasoit, Delaware, Lindley, Brighton, Gaertner, Ulster Prolific, Vergennes and Northern Muscadine. White: Lady, Duchess, Martha, Niagara, Pocklington and Jessica. Those raised to a limited extent, and some in a few very favorable localities are, in Blacks: Concord, Cottage, Belvidere, Eumelan, Aminia, Essex, Wilder, Adirondac, Othello and Brant. Reds: Wyoming Red, Poughkeepsie Red, Owassa, Agawam, Salem, Roger's Nos. 8 and 30, Jefferson and Walter. Whites: Lady Washington, ElDorado, Frances B. Hayes, Chasselas of Aylmer and Prentiss. The new varieties at Clarenceville are, in Blacks: Nectar or Black Delaware and Motterney (Caywood), Jewel, Standard and Paragon (Burr), Peabody, Waverly and Frances Scott (Ricketts), Rommel's Early Black, Senasqua, Burnett, Eaton, Norwood, Bacchus, Garber, Rockland Favorite and August Giant. Reds: Ideal (Burr), Woodruff's Red, Mary and Beauty. Whites: Empire State, Naomi, Golden Gem, Gazelle and Undine (Ricketts), Eclipse (Burr), Antoinette and Belinda (Miner), Mason's Seedling, Grein's Golden and Rommel's July. A number of these will probably be discarded, others may prove to be of much value.

Clarenceville, Que. WM. MEAD PATTISON.

GOOSEBERRIES.

IN connection with the test of varieties of gooseberries, it is desirable to give a few practical hints on their propagation, pruning, and culture. The gooseberry is a greedy feeder; it is, therefore, necessary to supply it well with good stable manure, the well rotted being preferable. This should be worked into the soil with a digging fork, to prevent the roots from being damaged, as would be the case if it were dug in with a spade. The best time to put in cuttings is in the fall; vigorous, firm wood should be selected. If the cuttings can be taken off close to the branch from which they spring, so much the better. The joints should be cut off so as to leave the cuttings from ten inches to one foot in length. The buds on the lower end of the cuttings must all be removed. This disbudding should be carried to a height of six or eight inches from the base. By so doing suckers may be prevented. If cuttings are inserted early in the fall, success is almost certain. Propagation from cuttings has a decided advantage over the process of layering. In the former case the suckers can be entirely done away with, while in the latter, they cannot be prevented. Layering is a sure mode and may be resorted to when any particular variety is required to be speedily obtained, though the plants will not be as handsome as those raised from cuttings.

PRUNING.—The stem should be kept clean to the height of three or four inches above the surface of the soil to permit the ground to be well cultivated, close up to the tree. The general system of pruning consists in retaining a moderate supply of strong, healthy, young shoots, from which alone can be expected large fruit. It is best not to head back too much; it would be better to remove the whole branch. Heading back tends to thicken the bush with shoots, so that gathering the fruit is made very difficult; therefore we must bear in mind to thin out so that the hand may be passed between the branches with ease.

The greatest drawback in successful cultivation of the gooseberry is the mildew. Spraying with the following solution just before the buds open in spring, and three times at intervals of three weeks, after the fruit has formed, will prevent its spreading:

Take of sulphide of potasium (liver of sulphur), ¾ oz., to five gallons of water; apply with a fine spray, such as the Nixon or Cyclone nozzle.

Experiments were made with the above solution at this Station last season, with good results. GEO. COOTE, *Hort., Oregon Experimental Station.*

RASPBERRY CULTURE.

OCCASIONAL queries convince me that some raspberry notes may be useful. They succeed very well upon well-drained sandy loam, which should previously be deeply plowed and thoroughly clean as respects grass and weeds. A root crop is a good forerunner. When planting time arrives the ground should be smoothed and marked at right angles. About six feet is a good distance for the rows, with hills four feet asunder. This distance of four feet may be used across the blackberry, currant and gooseberry patches, while the rows of each may vary in width to suit the nature of each. In planting run a plow along the mark and plant while the soil is fresh and moist. This can be done with great speed. During the first year, and all subsequent years, the cultivator should operate lengthwise and crosswise about once every fortnight, avoiding wet weather; hoe as often as weeds show themselves. Beans, cabbage or potatoes may be grown between the rows the first year. Plants may be shortened in to keep them out of the way. About July 1st, the second year, we shorten the young canes to two feet and shorten side shoots early in August if they become obstreperous, after that leave them till late in the fall, or the next spring, for the final shortening in. The cultivator should have sharp horizontal steel knives when sprouts show themselves. Cultivation is necessarily suspended during the picking season, but should be promptly resumed after picking season is past.

The books tell us to cut out the old wood and leave but few canes so soon as picking is done. This plan has some advantages, but large growers prefer to wait till spring. The old canes support newer ones and stop the drifting snow, and can be speedily removed when leaves are absent. In Northern Ontario it might be as safe to neglect all summer shortening in and grow long single canes. These could be bent over in late autumn and some dirt thrown upon their extreme tops to keep them down. In April the tops should be cut off at say, three feet from the ground. The canes would soon straighten up and go to work. The so-called winter-kill occurs, I think, in April, and is quite apt to show itself with Cuthberts, when the winter is very mild. Cuthberts were injured here in the spring of 1892, when every blackberry, grape, peach and quince came through unharmed. A winter mulch of coarse manure, free from weed seed or grass seed, would no doubt be useful.

The treatment of raspberries above indicated, will apply fairly well to blackberries, and, except in respect to pruning, to currants and gooseberries. That the

hill method with cross cultivation has been generally adopted by my neighbors shows that it has much to recommend it. The old-fashioned hedge rows usually cease to be productive after a few years. Cultivation, aggressive, early and often, will keep hedge rows and hills within bounds if pruning is attended to. On my soil the use of the plow in a raspberry plantation would mean my defeat by the weeds. Upon some soils, or under special circumstances the plow might be admitted. I stop the cultivator late in November and start in April. Weeds should be grown in a patch entirely separated from other crops.

Niagara Falls, Ont. E. MORDEN.

FERTILIZING AND CULTIVATING THE STRAWBERRY.

IN reply to your inquirer (page 110), I would say, that I have not had much experience with nitrate of soda on strawberries; intend to experiment this season to quite an extent. It must be used with care as any small lumps that come in contact with the foliage of any plant will burn the leaves or any soft stem it touches. About 200 or 300 lbs. to the acre applied when growth begins will be a good dressing. There is some difficulty in applying it, as it is coarse and mixes badly on that account, otherwise it could be mixed with twice its bulk of gypsum or dry loam.

I think the "Planet Junior," is the best implement to cultivate strawberries with, as it has several attachments that can be used, some of which will always do the work required, unless the weeds have been allowed to grow too large; in which case they must be cut with the hoe and raked out. I do not know any hand implement that will work among large weeds; in fact if weeds are allowed to get large in a newly planted strawberry patch, the plantation will not amount to much. I do a large amount of work with a short-tooth steel garden rake among my plants, especially in the rows where I cannot get with the cultivator. When the weeds are just starting the rake works well, and that is the time the work should be done.

Yours very truly,

W. W. HILBORN.

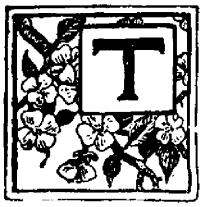
N. B.—I believe nitrate of soda will increase the yield of strawberries very much, especially if there is already a sufficient amount of potash and phosphoric acid in the soil. The nitrate gives a quick growth, just what is wanted for the strawberry. I would not expect satisfactory results from soil not already containing quite a large percentage of potash and phosphoric acid, as nitrate is not a complete fertilizer.

W. W. H.

MCMAHAN APPLE.—Mr. E. S. Goff, of Wisconsin, says this apple originated in 1860, from seed of the Alexander, sown by the late Isaac McMahan, and was first introduced to the public in 1873. The fruit is rather acid for dessert use. Season, from the middle of October until Christmas; but with care may be kept till February.

PRUNING FRUIT TREES.

APPLES.



HERE is yet room for great improvement in this much-written-about operation, judging from the specimens one is continually meeting with in gardens. More original thought on the subject and less adherence to old methods handed down from generation to generation is wanted. Take espaliers and dwarf trees, for instance; how much more fruit might be gathered if one half of the stronger wood was cut right away and thinner and more extended growth allowed, instead of pruning off all the annual shoots only and forming the thick, stubby and scrubby-headed samples of professional skill, which will not admit any light and scarcely leave room for fruit to grow at all. It is very necessary with any kind of apple tree that the branches should be kept thin enough to allow the rays of the sun full play amongst the fruit. I am speaking now with reference specially to the garden, where only choice fruit should be grown. Gather an apple from an outer branch and another from the inside of a thick-foliaged tree. On tasting, the latter will be found to bear no comparison to the former with its rich appetising flavor and rosy, attractive color; therefore, get as much as possible of this health-giving sunshine concentrated in the fruit, and do not be afraid to use the saw on a tree that has been neglected in this respect for many years. Of course, in the case of a tree properly pruned from the first, and some kinds scarcely require pruning at all, a saw would not be required, as cutting off large branches must be considered as only a necessary evil. When done, the bough should, for appearance sake, be cut right away and no stump left. As regards profit, this thinning out is of great importance with some varieties, especially in these times when size and color in fruit are of so much more value than quality. We cannot, or we do not care to, well thin out the fruit to advantage on a standard tree, so the next best course is to thin the branches. I had an instance the past season of the advantage of thorough thinning. An apple tree of a good local variety, was so laden and the boughs so fallen together that the fruit reached only half the usual size and was devoid of color, while on a tree of the same sort recently grafted, the apples were very fine, well-colored, and a fortnight earlier, and, consequently, worth quite double in the market.

But I cannot approve of the general orchard method of taking out all the inner bearing sprays; rather I encourage this central growth to a certain extent, and in re-grafting even insert grafts on young shoots strong enough for the purpose, as this tends to preserve a well-balanced head and is conducive to the longevity of the tree. Many an apple tree which has long succumbed to the elements would be standing to-day if more central growth had been the aim and

outer branches thinned to entice the sunshine to the fruit, instead of forcing all the fruit out to the sunshine by persistently trimming off all the young growth up a branch, leaving bearing spray only at the extreme end, thereby giving the wind every chance to do damage with this leverage of, in some instances, 12 feet or 15 feet of bare limb.—The Garden.

DO VARIETIES OF FRUITS RUN OUT?—This question was discussed by Prof. Bailey, in a very thoughtful paper read before the W. N. Y. Horticultural Society. In his opinion the disappearance of varieties is not due to age. The Ribston is at least two hundred years old, and still one of England's now popular apples. The explanation is rather to be found in the fact that varieties are more or less local in their adaptation, and are ill adapted to their new environments. English apples are not well adapted to American conditions, and even New England apples, such as the Baldwin, are not so well adapted to the Western States as some varieties originating in the west.

Growing Tuberoses.—The secret of success with tuberoses is to sun and thoroughly dry the bulbs after digging them in fall. If the weather is clear and warm, cover them at night to protect them from frost. If it is rainy or cold, dry them with fire-heat. Keep them through the winter in the warmest dry place available. Macon county, North Carolina, on account of its altitude has a climate much like that of Philadelphia. To grow early blooms, I select perfect bulbs with a healthy centre-shoot, and plant them in a depression in a raised bed with a south-east exposure. I do not wait until the weather is quite settled, but plant when the days are beginning to be warm, even if the nights are quite cold and frosty. The depressions in which the bulbs are planted are from three to four inches below the general surface of the surrounding soil. I cover only the central shoots—that is, the sharp points of the bulbs, which, if they have been kept sufficiently dry and warm, will show signs of growth—with an inch of dry soil. When it rains, freezes or is quite cold, I cover the bed with boards. I also cover it at night aad do not uncover in the morning until the air is warm. If the nights are very cold I put on some additional covering, such as bundles of fodder, straw or strips of old carpet, until the sun gets warm next day. I am careful that no rain falls upon the bulbs until both days and nights are quite warm. By that time small roots are formed, and the tops of the tuberoses soon start into a vigorous growth. Bulbs started in this way blossom from two to three weeks earlier than those not planted until cold weather has gone. Tuberoses do not require a very rich soil, but it should be light, warm and fairly good. Poor soil gives delicate blossoms and small spikes. Good soil gives firm, medium-sized blooms, and handsome spikes, that last well. Soil made very rich gives long, heavy spikes and large blooms, but they fade quickly.

New and Little Known Fruits

McMAHAN'S WHITE.

I said of this in my report for 1891:—"Among the many new varieties which are being constantly heralded from different points, it is often difficult to discriminate between the useful and useless. Of the prominent aspirants for public recognition I think none more worthy than that known as 'McMahan's White.' The fruit of this was exhibited at the last meeting of the American Pomological Society in Washington, grown both in Wisconsin and Minnesota. A large oblong waxy-yellow apple, with a light blush on one side, flesh white, juicy and of fair quality. Mr. A. L. Hatch, of Ithaca, Wisconsin, writes me as follows: 'A seedling from Alexander, introduced here about 20 years ago, and is proving more valuable than any other. It will grow and bear apples "next year" when other varieties are tired out. I had 80 barrels of it this year—sold higher in Chicago and St. Paul than any other of its season.'"

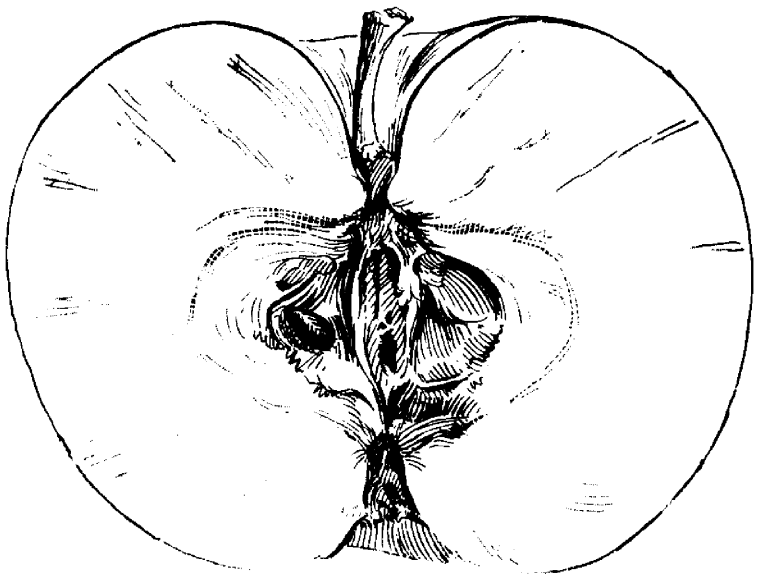


FIG. 528.—SECTION OF MCMAHAN'S WHITE.

Nine trees of this variety were planted here in 1888. They were all vigorous, have never been injured by winter's cold or spring suns, and are now among the largest trees in this orchard. They fruited last year and upheld the good opinion which I had previously formed as above expressed. On account of the delicate and tender character of skin and flesh, it will need careful handling in shipment. It must be remembered, also, that with all its good points it does not fill the bill as a long-keeping winter apple for export. I do not think it will keep in this latitude longer, if as long, as Wealthy.

Central Experimental Farm, Ottawa. JOHN CRAIG.

BELLE DE BOSKOOP.

During the past two years, specimens of the fruit of this variety have been received from many widely-separated sections in the Dominion. Judging from the samples received and from its behaviour at Abbotsford, Que., where it was planted in 1885, I am led to believe, in the event of it proving a reliable bearer, that it will be a valuable addition to the list of winter varieties in the apple growing sections of the Dominion. Trees of this variety were obtained by the late Charles Gibb, from Frères Simon-Louis, of Lorraine, France, about nine years ago. At Abbotsford the tree is rather a slow grower, round topped or spreading in habit. Fruit medium to large, sound; skin a russety-green overlaid with dark red. Calyx open, basin moderately deep, stem stout, an inch or more

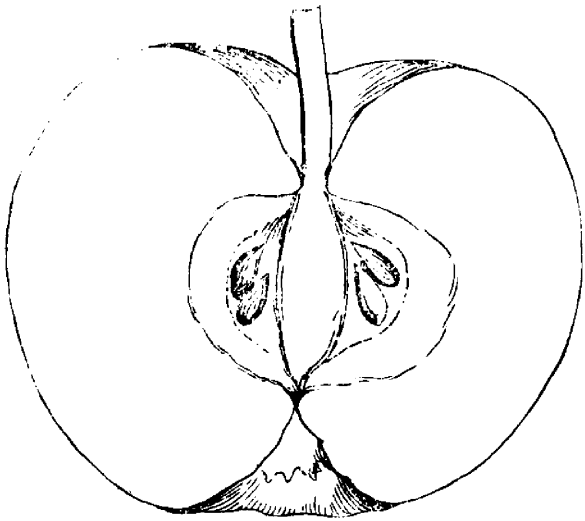


FIG. 529.—BELLE DE BOSKOOP.

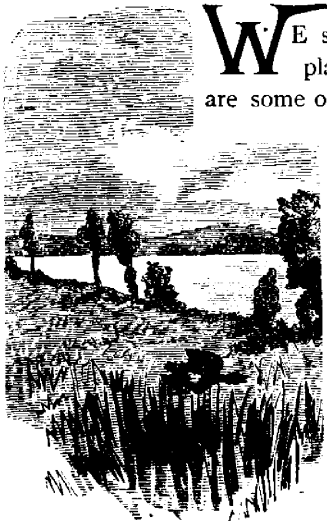
in length, set in a deep wide cavity. Flesh firm, of fine texture, tinged with green near the skin, rich and juicy with a breaking quality very agreeable. Season late winter. The drawing has been made from a specimen grown by Mr. R. W. Starr, Wolfville, N.S. Scions were sent him by Mr. Gibb some years ago. The fruit grown by Mr. Starr, excels in beauty and size any that I have seen elsewhere. Frères Simon-Louis have included it in their first selection of valuable winter varieties, and say that in their opinion "it is one of the finest and best of the late table apples."

Experimental Farm, Ottawa. JOHN CRAIG.

The Garden and Lawn.

CANADIAN WILD-FLOWERS.—III.

BUTTERCUP FAMILY—(*Continued*).



WE stated in the December number that some of the plants of this family climb by their leaf-stalks. Such are some of the members of the clematis tribe. Two of these are to be found growing wild in Canada, of which the *Clematis verticillaris* is the most showy. Its flowers are about three inches across, composed of four bluish-purple sepals, appearing in May. It is not very common; to be found usually in rocky woods or ravines, and in mountainous parts of the country, especially north-westward. Some of the outer filaments of the stamens are usually enlarged, gradually passing into small spatula-shaped petals. The leaves are trifoliate; that is, divided into three leaflets or little leaves; the leaf-stalks are slender, and the leaflets slightly heart-shaped. The seeds are ornamented with feathery tails, so that the plant is not only showy when in bloom, but also in the autumn when covered with these feathery appendages of the seeds.

The other climbing clematis is quite common, it is *Clematis Virginiana*, usually known by the name of Virgin's Bower. It will often be found growing on the banks of streams, climbing over small trees and shrubs. Its leaves are also compound, being formed of three ovate acute leaflets, which are lobed, and somewhat heart-shaped at the base. The flowers are borne in panicled clusters, differing in this from the one above described, the flowers of which are borne singly upon the flower-stalk. There are no petals, but the sepals are thin and white; and the seeds are also furnished with feathery tails. Both of these can be easily grown and trained over a trellis, veranda, or door porch, making pretty ornaments wherever climbing plants are wanted.

In British Columbia will be found other varieties of clematis, known to botanists as C. ligusticifolia (Nuttall), and C. Douglasii (Hooker).

ANEMONÆ, ANEMONE TRIBE.

This tribe is represented by three genera in Canada, if the genus Hepatica of Dillenius is to be retained as distinct from the genus Anemone of Linnæus. These are anemone, hepatica and thalictrum. The plants of this tribe produce

for the most part incomplete flowers, for they are generally destitute of petals, and when these do exist, they are small and stamen-like.

Of the genus anemone we have a number of species. *Anemone parviflora*, the small-flowered anemone, is a low-growing plant, varying from three inches to a foot in height, the flowers of which are white, and, as its name implies, small, composed of five or six oval sepals, an indefinite number of stamens, and numerous pistils. It is abundant about Lake Superior and northward. Blooms in June.

A. multifida, the many-cleft anemone, so called because the leaves are twice or thrice three-parted and cleft. The flower is usually red, but sometimes greenish-yellow or whitish. The sepals, varying from five to eight in number, are from a third to half-an-inch long, and obtuse in form. This species grows from six to twelve inches high, and is to be found from New Brunswick to British Columbia, blooming in June.

A. cylindrica, the long-fruited anemone, grows to the height of two feet, is slender and silky, the leaves of the involucre have long stalks ; the somewhat obtuse sepals are five in number, of a greenish-white color ; the fruit head is cylindrical in form and about an inch long. It is very common in light soils throughout Ontario, blooming in May and June.

A. Virginiana, the Virginian anemone, is the tallest of our species, attaining a height of from two to three feet, and is well worthy of a place in our flower gardens, where it thrives luxuriantly if the soil is rich, and the situation one of partial shade, the flowers increasing in size and beauty under careful cultivation. The sepals are five in number, covered with minute silky hairs ; ivory white ; obtuse in shape, and the fruit head oval. In some instances the flowers are greenish, and the sepals acute. The leaves are three-parted, pointed and toothed. The flower stalks are elongated, the central naked, the lateral have a two-leaved, small involucre at the middle. The central flowers are the largest ; these open first, followed, as they fade, by the lateral blossoms; in this way by a succession of bloom there is a continuation of the flowering period for several weeks. This species is to be met with from New Brunswick to the Rocky Mountains, and may be found in bloom from June to August.

A. nemorosa, the wood anemone, is a pretty species that blooms in April or May, usually found growing in light loamy soils in the partial shade of somewhat open woods, through which the quivering sunbeams gently fall. The flowers are about an inch broad, composed of four to seven oval sepals, white on the upper side, but frequently tinted on the outer side with purple, or a dull pink. The plant is only from four to nine inches high ; the stem perfectly simple, slender and leafless, except the involucre, which is composed of three leaflets, borne on long leaf-stalks, and which are wedge-shaped and toothed. It thrives well in cultivation if given a partially shaded situation. It is found growing from New Brunswick to British Columbia, and, though local in its distribution,

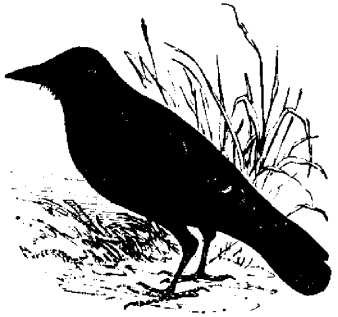
is by no means rare. It is of this one that Bryant, America's woodland poet, is singing as he tells that

> "The sun of May was bright in middle heaven,
> And steeped the sprouting forests, the green hills
> And emerald wheat-fields in his yellow light.
> Upon the apple trees, where rosy buds stood clustered
> Ready to burst forth in bloom,
> The robin warbled forth his full clear note for hours,
> And wearied not. Within the woods,
> Whose young and half transparent leaves scarce cast
> A shade, gay circles of anemones
> Danced on their stalks."

A. Pennsylvanica, the Pennsylvanian anemone, the flowers of which are composed of five obvate white sepals from half to three-quarters of an inch in length, and which are to be found from June to August, is also not rare in Ontario.

A. Baldensis, Hooker, is found growing in arid places on the eastern summits of the Rocky Mountains in latitude 52° to 55°. Also *A. delboidea*, Hooker, occurs in British Columbia; *A. Richardsoni*, Hooker, is found on the shores of Hudson's Bay; and *A. narcissiflora*, Linnæus, on the north-west coast.

The most beautiful of Canadian anemones is found in our western prairies, and is known to us only by name and the description of botanical writers. It is called the pasque-flower; by botanists *A. patens var Nuttaliana*. Mrs. Traill says, "It is one of the earliest of the spring flowers to gladden the earth with its large azure-blue blossoms." Gray describes it as being villous with long silky hairs; flower erect, large, with usually some glandular bodies like abortive stamens answering to petals, and developed before the leaves; sepals five to seven, one inch to an inch and a half long, purplish or whitish, appearing in March and April.



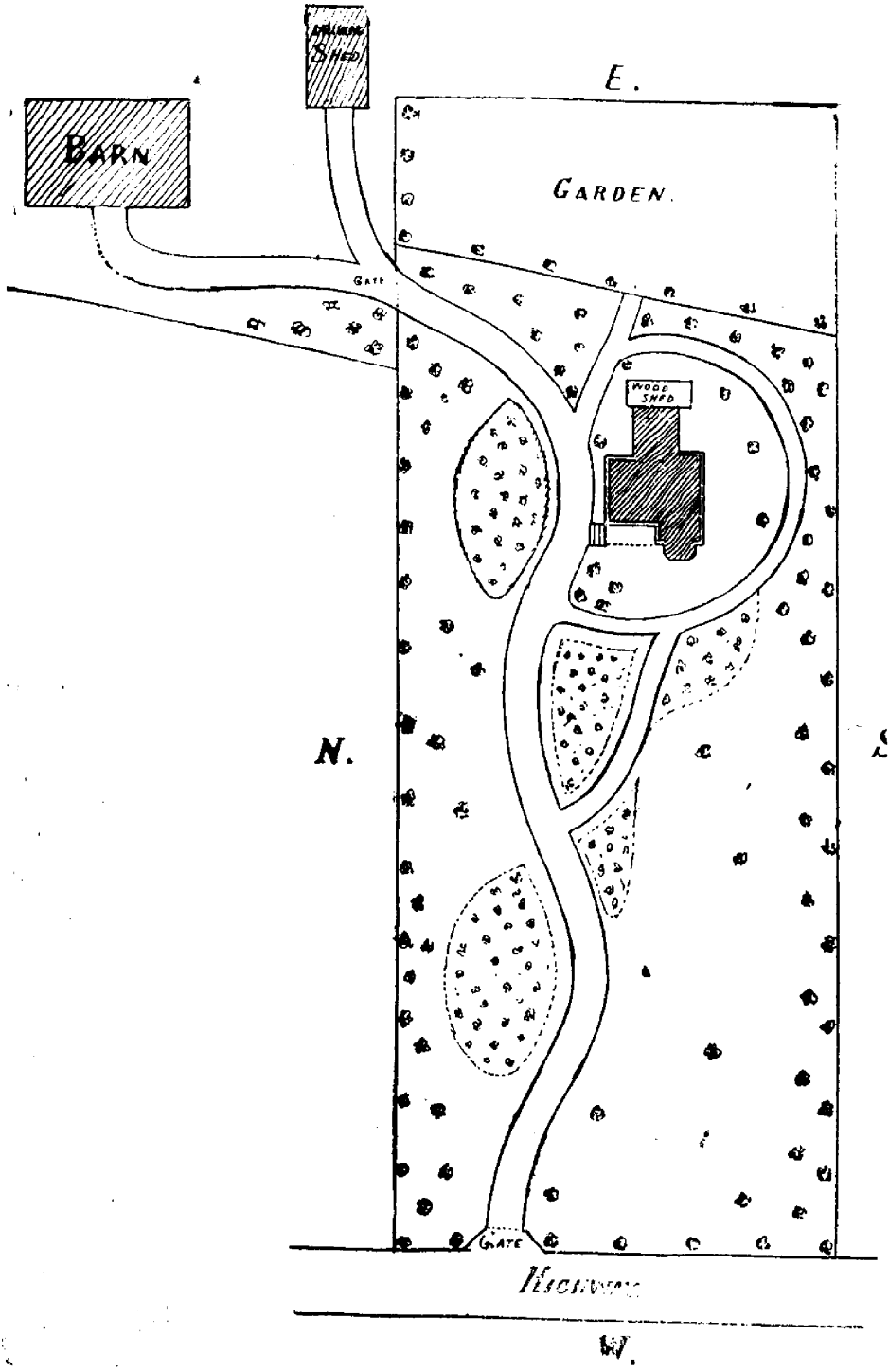


FIG. 530.—PLAN OF HOUSE YARD.

PLAN OF HOUSE YARD.

SIR,—I want to lay out the grounds in front of my house with trees and shrubs and walks. I first referred the matter to Principal Mills, of the Ontario Agricultural College, and he referred me to you. I have already a row of large soft maples on the north, besides which is the drive-way to the barn. On the south side, I have two rows of Norway spruces, planted last spring. In front of the house, there is an elevated lawn 140 feet wide, around which is a circular road to the south side of the house. I want to know how to lay out and plan the ground between the elevated lawn and the highway. It is level and smooth, and seeded down to grass.

ANGUS MCKAY, *Embro.*

Not having seen Embro subscriber's place, and having no measurements, any plan for improvements which I could make would be very imperfect. However, this plan which I herewith send you may give him some assistance. On whatever part of the lot the dwelling house is located the natural way of approach, which is commonly adopted, is by a straight road from the entrance gate to the front door of the house. Graceful curves are more pleasing to the eye of the landscape admirer; yet, curves should not be made in driveways, unless there be some apparent reason for making them; therefore I would plant clumps of flowering shrubs and plants where indicated in this plan. These shrubs should be suitable for the climate. I think the following kinds would do well there, without much protection: Dogwoods, elders, strawberry tree, forsythias, fringe tree, mock orange, lilacs, hardy hydrangea, spiræa, snow berries, honeysuckles, viburnums, wiegelias, and Japan quince. These clumps should be cultivated and intermixed with hybrid perpetual roses, pæonias, phloxes, hardy lillies, delphiniums, aconitums, columbines, campanulas, dielytras, rudbeckias, irises, etc.

In addition to the trees already growing along the fence lines as indicated in subscriber's sketch, I would plant in rear of the dwelling house some American elms, American lindens, silver-leaved and cut-leaved maples. For ornamental trees on the lawn in front of the house, I would plant, weeping birch, purple birch, oak-leaved mountain ash, tulip tree, arbor vitæs and Austrian pines; but they should not be planted so thickly as to prevent a view of the dwelling house from the highway. No trees should be planted very near the house. I would plant some clematises to climb on the veranda railings.

Be it observed, that the approach, driveway and gravel walks must be kept clean and neatly edged, and the lawn kept cut short; otherwise the boorish straight road, native plants, shrubs and trees in their wild state is much to be preferred. I am sure this need not be mentioned to your intelligent subscriber, although I have no doubt you have seen many instances of designs being half neglected.

Cataraqui. D. NICOL.

PALMS.

PALMS are among the most useful, and are fast becoming the most popular, of all plants for house decoration. When specimens of sufficient size are placed on the lawn, separately or grouped, or mingled with flowering plants, they impart a tropical appearance to the surroundings that can scarcely be obtained by the use of any other plants. There are a great many varieties that are excellent for hot-house decoration, but only a few that will endure ordinary house culture or exposure to our climate, and a great deal of loss and disappointment is caused by purchasing rare and high-priced kinds, which are quite unsuited for this purpose. The following varieties are among the best for house culture and summer display. The amount of hard usage some of them will endure is surprising: Latina Borbonica, Phœnix rectinata, Corypha Australis, Chameroyis excelsa, Kentias, Seaforthia elegans. These kinds will stand full exposure to the sun and atmosphere, if the roots are kept moderately wet. If the pots are plunged to the rims they will retain the moisture much longer. A few handfuls of ashes put under the drainage-hole will keep out the earthworms. The proper soil for palms is loam two parts, leaf mould or peat 1 part, sand 1 part. Care should be taken not to overpot the plants. Large specimens can be kept healthy without shifting for many years, by the judicious use of stimulants.

Hamilton, Ont. WEBSTER BROS.

Saccharin.—The Berlin correspondent of the Louisiana Planter states that "the parties interested in saccharin are now making every effort to widen the markets and multiply the uses of the article. The well-known factory of Messrs. Fahlberg, List & Co., at Salbke, has brought a product into the market called saccharin essence, which is said to be 500 times sweeter than common beet sugar. It appears that this essence is sweeter yet than the saccharin proper and is to be used for the manufacturing of liquors. Furthermore, its use for preserving fruits is advocated as follows: In the process of preserving fruit it frequently happens that as soon as certain microscopical organisms, sticking to the peel of the fruit, come in contact with common sugar, fermentation arises, which causes the fruit to be spoiled altogether, or at least to be deteriorated. In order to prevent this, a certain amount of sugar is added, or the fruit must be boiled so much that the germs of the microbes die off. But in this way the taste and appearance of the fruit loses greatly. Experiments with saccharin are said to have led to good results in this respect. If saccharin is used alone a perfect sterility is obtained when the fruits are boiled up to 80° C., and then left for two and a half hours in this temperature. The quantity of saccharin to be added is fixed at 35 grammes for 17 litres liquid. Taste, color, and appearance of the preserved fruit are said to be excellent when the latter is treated in this way."

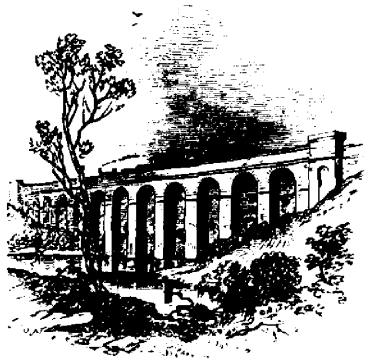
PALMS FOR HOME DECORATION.

SIR.—An article on the Cultivation of Palms would, I am sure, interest your readers, for almost every house aspires to have one, and it is seldom that one sees in a horticultural paper what soil they should have and whether they will bear exposure and sunshine.

L. H. K., *Collingwood.*

THERE is very little difficulty in growing a few palms for house decoration, and nothing is more suitable for that purpose, if the proper varieties are procured. The following are rapid, easy growers: Lantania Borbonica, Kentia Fosteriania, Areca Buneri, Kentia Canterburyana, Seaforthia elegans, and some others. The method now mostly adopted is to procure seeds from seedsmen, but, as their vitality is of short duration, they can only be had at certain times, and respectable seedsmen will not sell them unless they are fresh, and the time of their production varies with the varieties. They are now raised in such quantities in this way by nurserymen that it is scarcely worth while to do it unless large quantities are wanted. I saw, a few days ago, five nice plants sent by mail to a party for one dollar, in very fine condition. If seeds are preferred, sow in nice friable loam with a fair amount of nice sand intermixed. Drain your pot well, that no stagnant water may remain to sour the soil. Keep them moist; never allow them to become dry, or you cannot expect success. Their cultivation is easy. Use a good yellow loam, if it can be had, with a small proportion of well-rotted manure and some silver sand. Keep the leaves well and often syringed, or washed with a sponge, to keep down insects. The scale seems to be their greatest enemy. The sponge reaches them best, and their destruction is easily accomplished, owing to the flat nature of their leaves. In re-potting, never break their roots. They have a tendency to root mostly in the bottom of the pot. If the roots are broken it will take time for them to recover, and perhaps you may lose them entirely.

Government Grounds, Ottawa N. ROBERTSON.



The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

AT THE GREAT EXPOSITION.—Having been appointed by the Minister of Agriculture for the Dominion to take the oversight of the Canadian Horticultural Exhibit, at Chicago, the editor of this journal craves the kind indulgence of its readers during his absence. He hopes, however, to gather so much useful and interesting information through the advantages thus afforded him, that the journal will gain rather than lose in consequence. It is his intention to write in detail such events and descriptions as may be interesting to those who stay at home, and thus, in some measure, bring before them a general idea of the World's Exhibit, more especially from the standpoint of a Canadian Horticulturist. All mail matter, questions, papers for publication, subscriptions, etc., will, as usual, be addressed to him at Grimsby; and his assistant will give them the usual attention, forwarding to Chicago those which require his personal supervision.

A LADDER FOR PICKING FRUIT.—Mr. S. H. Mitchell, of St. Marys, sends us a model of a ladder for picking fruit, which appears to be very strong and durable. He describes it as follows: This ladder can be made of the required length, the size represented by the model is fourteen feet long, and the manner of making it is as follows: Take a clear lumber 1½ inches thick and fourteen feet long, dress on both sides to 1¼ inches plump. Now rip it up into two-inch strips, dress both sides down to 1¾ inches. Use four of these strips for the uprights of the ladder and cut up the balance for steps, cutting the bottom step twenty-two inches long and the one for the top fourteen inches long. Lay down two of the uprights and nail the steps, and cut the other steps the length required to suit and nail them on about ten inches apart. Lay on the other two uprights and nail them on firmly, using wire nails long enough to go through and clench. Give two coats of paint and the work is done.

Question Drawer.

Diseased Pear Trees.

551. SIR,—What is the cause of the pear leaves turning black and the limbs dying? Is it blight? and is there a cure? My Flemish Beauty pears were badly rusted and cracked last summer. Is there any remedy?

S. W. BIGHAM, *Islington.*

There is no doubt that the trees referred to by our correspondent are troubled with the ordinary pear blight. Numerous remedies have been proposed, but none which is certainly effective.

Flemish Beauty pears are notably subject to the scab, and are, in consequence, easily cracked, but we believe a remedy for this evil has been found in spraying the trees with copper solutions, so often referred to in these columns. The latest plan recommended is to spray with sulphate of copper, one pound to twenty-five gallons of water, before the foliage appears, and, after that, give several applications with Bordeaux mixture, which is described elsewhere. This treatment may possibly also help to prevent the blight, and it will certainly increase the health of the foliage of the trees, and, consequently, their thrift. It has been shown to be also decidedly useful in causing the fruit to grow larger and cleaner.

Diseased Grape Vines.

552. SIR,—For the last two years I found on my Niagara grapes one or two berries in many bunches that were bad. Each year they were the same, but I did not mistrust any danger until last season when they were very bad, some rows scarcely showing a clean bunch. Many of them would take four baskets, as they came off the vines, to make one for market, and that with a great deal of work. I sent for F. Lawson Scribner's "Fungus Diseases," and found that he exactly described my trouble. Can you tell me where the ingredients can be bought the cheapest, as a large quantity will be required this season, many people around here being in the same trouble as myself?

B. A. BAILEY, *Niagara.*

It will be necessary for the vineyardists to spray their vines faithfully in order to secure immunity from these evils. Try spraying with copper, one pound to twenty-five gallons of water, before the foliage appears, and then use Bordeaux mixture, two or three times after the foliage appears, and excellent results will be evident.

A Fertilizer.

553. SIR,—I send you a formula for a fertilizer recommended in the New York World. It is as follows: 500 lbs. air-slacked lime, 300 lbs. common salt, 300 lbs. fine ground phosphate of lime, and 100 lbs. nitrate of soda. Please tell me where the phosphates can be got and what they are worth. This mixture is said to be worth less than $15 per ton. Do you think it suitable for the orchard and garden?

M. A. BAILEY, *Niagara.*

Doubtless each of these elements are valuable on land and the fertilizer will be worth all it costs. It is only by experiment that we can tell which elements

are most needed on a given soil for a given crop. It will be generally found that the best plan is to buy the fertilizers separately and apply them to the soil according to one's judgment, until the results can be compared.

Spraying Pumps.

554. SIR,—In your February No. I notice the "Little Dandy" spraying pump. It seems to me to be lacking an important point, viz., an arrangement for agitating the water and mixing the ingredients. The new Lockport sprayer has added a stirring hose in the rear of spout which agitates completely. I have an old one without an agitator, and I managed to fit one to it. My plan of arranging my spraying apparatus was to place a barrel on its side in the wagon. I made a frame with four pieces, 3x4, crossed and bolted at the corners. I then raised four legs from the sills to the top of the barrel, and then placed a plank on these. I placed my pump in position, bolted it to the plank, running the main pipe through the bung hole. I then bored a 5x8 hole for the agitator pipe, and in this way you have the spraying frame, pump and all attached and always ready for business. It can be put in a cart or wagon in a few minutes, and there is no danger of upsetting. This plan is safer than having the pump on the end of the barrel, which might cause it to upset.

M. A. BAYLY, *Niagara.*

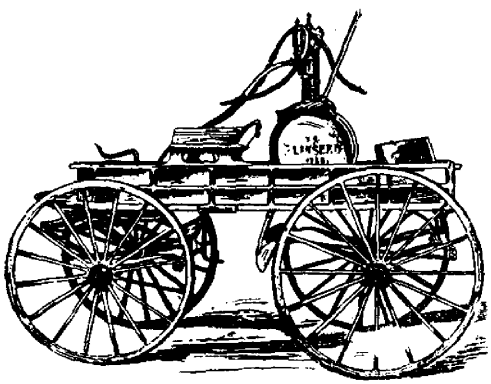


FIG. 530.

The liquid used for spraying can be easily agitated with a long stick, but an agitator which works continuously is more convenient, and one could easily be attached to the "Little Dandy," or to any other of the pumps. The plan of laying down the barrel on its side is an advantage, being safer from tipping. We give an engraving of this way of placing the barrel in a spring wagon, the pump here shown having two hose, and a wooden agitator, tha latter to be used as often as thought necessary. The frame described by our correspondent seems commendable.

Hybridizing Apples.

555. SIR,—Will you please tell at what precise moment the pollen on apple blossoms is best fitted for hybrids? Years ago I experimented with apparent success, but during four consecutive days I could never see any pollen on my brush, neither could I see any on the blossoms.

Reply by J. A. Morton, Wingham, Ont.

At the opening of the anther cell under natural conditions, is the most potential period of the pollen for fertilization. How long after that the pollen

of the apple will retain its vitality I cannot say, probably for a few days. The wallflower's pollen retains its for fourteen days, bladder ketmia for at least three days, and the hemp, the date and others for a year.

Novelties.

556. SIR,—An agent here is selling peach trees grafted on Minnesota hazel stock, which he states causes them to be much hardier than on peach or plum stocks, and that they are giving good crops as far north as Guelph. He is also selling the grape vine raspberry, which he states will do well on clay soil, on which the ordinary raspberries will not do well. Can you offer your subscribers any information with regard to the above?

A. G. HEAVEN, *Boyne, Ont.*

We would advise our subscribers to beware of such untried novelties as are here spoken of. If any of them take pleasure in spending money for what they consider the luxury of trying new things worth the expense, but for ourselves we prefer to wait until they have been fully tested by reliable persons before investing. If any of our readers have had any experience with these new things, let us hear from them.

Japan Plums.

557. SIR,—Are Japan plums really exempt from black knot, as is claimed for them in the Rural New Yorker of February 18th?

D. S. McD., *Mabou, N. S.*

558. SIR,—Are the following plum trees hardy, and what degree of frost will they stand,—Ogan, Grand Duke, Botan, Spaulding, Monarch, Abundance and Mariana?

G. H. NIXON, *Hyde Park, Ont.*

The Japan plums have not been long enough tested for us to give any very decided opinion regarding them. Mr. S. D. Willard, a noted plum grower of New York State, has probably had the most experience of any one with them, and he stated recently that they appeared to be very hardy in wood, and, so far, exempt from black knot. Just what degree of frost we are not yet prepared to say. We will be pleased to hear from any of our subscribers who may have tested them, or others above mentioned.

Labels.

559. SIR,—Is Manilla paper, or zinc painted white, the most desirable for tree labels.

G. H. N., *Hyde Park.*

Manilla paper might answer well, if it is not intended to be exposed to the weather, but the most satisfactory label that has been used by the writer is zinc without paint. Lead pencil marks on zinc, when exposed to the weather, become almost indelible.

Hardy Vines.

560. SIR,—Please give a list of hardy climbing vines for the north side of a house in Cape Breton. D. S. McD., *Mabou, Cape Breton.*

Not being familiar with the climate of Mabou, we can scarcely give a very complete answer. The following would be worth trying: Ampelopsis Virginiana, Celastrus scandens, Clematis Jackmani, Clematis viticella, Lonicera Halleana. Will some reader reply more exactly?

Pruning Plum Trees.

561. SIR,—About four years ago I had two white plum trees given me, and I was strictly charged and warned not to prune them, but let them grow as they liked, because, if I pruned them, they would die. Well, now they are large, straggling trees, and last year bore a few plums, the most of which were spotted. What must I do; and when is the proper time to prune them? M. E. S., *Mount Royal Vale, Que.*

It is a mistaken notion that any of our fruit trees will do as well neglected as if cared for. No branches should be allowed to grow long and straggling; all such should be cut back in the spring. It will be difficult now to bring these trees into proper shape, but a good deal can be done by the intelligent application of the knife in March or April.

Varieties of Cherries.

562. SIR,—In an orchard of one thousand trees or so, would it be better to plant equal proportions of sweet and sour varieties, or would you, in Southern Ontario, plant a larger proportion of the Hearts and Bigarreaus? ALLAN BROS., *Winona.*

In Southern Ontario we would advise the planter to include in his orchard an extended list of the best varieties. The Heart and Bigarreau cherries are like peaches, very uncertain, but when they do yield a crop the prices are high enough to make them profitable. At Maplehurst the following varieties have succeeded well: Hearts—Black Tartarian, Early Purple, Elton, Governor Wood, Knight's Early Black; Bigarreaus—Mezel, Napoleon, Elkhorn. Windsor might be added to these. Of Dukes and Morellos, the Early Richmond, the two varieties of Montmerency, English Morello and Reine Hortense, the latter an excellent variety for all purposes.

Training Grapes.

563. SIR,—I was overtaken with winter before I pruned my vines last year; and the weather this month is so far (March 13th), very unfavorable. Kindly inform me what is the latest period suitable for pruning the vineyard? GEO. STRAUCHEN, *Woodstock.*

The only objection to pruning the grape in the month of April is the loss of sap, commonly termed bleeding. Many vineyardists do not finish the work till past the middle of that month, and the loss of vitality, so far as we have noticed, is not observable.

Question Budget

(Will readers please answer.)

26. SIR,—Has apple pomace any manurial value? If so, would it pay to haul it a quarter of a mile, if it could be had free of charge? Also, when should it be applied?
L. S. MORGAN, *Port Dover.*

27. SIR,—How would I go to work to renew the bark on old apple trees; it having come off in patches?
L. G. M.

28. SIR, Which is the earliest and which is the latest plum to grow for market?
WM. SWITZER, *Kirkton, Ont.*

Open Letters.

Apples Near Montreal.

SIR,—I had a medium crop of apples last year. Two-thirds of mine were Fameuse, the rest were summer and fall apples; I sold $950 worth of apples, but of this only $325 was for Fameuse, which were so spotted. I tried fungicides for the apple scab, but, unfortunately, it rained immediately after each application.

I shipped a trial lot of Wealthy, Alexander, and Plumb's Cider to Scotland. They carried well, and the receivers were delighted with the Wealthy; the Alexander was too ripe, and the Plumb's Cider had not enough color. The Wealthy sold for 16/ a barrel, the Alexander for 15/ and the Plumb's Cider for 12/ to 14/. They were put on board ship the day after they were picked.

How does the Beurre d'Anjou compare in hardiness with the Flemish Beauty? It has done very well for three seasons, but, before going more extensively into them, I would be glad if some of your subscribers who have tested them in a climate the same as this would give their experience through your valuable paper. The Flemish Beauty pear appears to be as hardy here as the Fameuse apple and it has the same fault of spotting in unfavorable seasons. In a sheltered spot in my garden I can grow Bartletts for home use.

R. BRODIE, *St. Henri, Montreal, Que.*

Care Plum Trees.

SIR,—There is a great deal of talk about the black knot on plums, a disease which deters many people from engaging in plum growing. I do not wonder that plum trees die with the treatment they get. They are planted in a hole, about a foot across, in which the roots are cramped like a wisp of straw, and two or three shovelfuls of earth are thrown in and tramped with the foot, removing some of the bark at the same time. Neither root nor top are ever pruned and they are left to grow in grass or poor land that would not grow thistles, and then the planter expects the tree to grow and yield $12 or $15 worth of plums, the second or third year. More than half the trees die the first year, and the remainder will live a year or two and then die from black knot. These people then want a black knot law put in force.

Now, I will give you my plan of caring for my plum trees. First, my land must be well enriched with barn manure and wood ashes, the year before. I dig a hole two or three feet in diameter and ten or twelve inches deep, and then taking the tree in my left hand, with the roots towards me, I cut off, with a sharp pruning knife, all the broken and damaged roots, turning the tree around as I cut, and drawing the knife toward me to make a clean shave. Then standing the roots of the tree on the ground, I cut off all side branches, except three or four nicely balanced ones around the top; then cut off one third from each of these, and the tree is ready to plant. Then I set the tree in the centre of the hole, perhaps one-half an inch deeper than it was in the nursery, and spread out the roots evenly, covering them with fine earth which I press down firmly with my foot. I continue

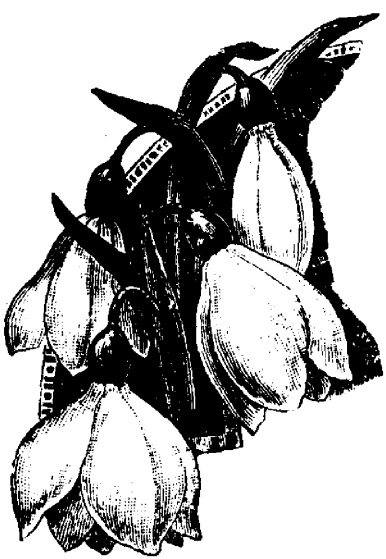
in the same manner with the upper roots, firming the earth as I proceed, and keeping back a little earth to cover loosely the top. This I keep loose all summer, hoeing it every ten days or so. Some people think that there is no use of hoeing except to keep down weeds. I hoe to keep the ground moist, and prevent it from becoming too dry. The following spring I put a good coat of manure all around the tree over a space of three feet from it, and keep it stirred and worked in with the hoe, so that it will rot, and that the rain will carry it to the roots. If this process is continued three or four year, there is no danger of being troubled much with the black knot, and a first class crop of fruit is almost sure. We must feed our trees. The plum is a great bearer and will stand any quantity of manure. I consider it the best paying of all fruit crops.

Some people say that they have no room to plant. I have an eighth of an acre, a house x 27, woodshed 24 x 16, well and clothes drier, besides, and I grew $40 worth of plums last year; I have never failed in a crop. I have taken most of the prizes at our fall shows the last fifteen years. Some of my Lombard trees have been bearing fifteen years and I have never failed in taking first prize with them. The Lombard is very much subject to the black knot. Last winter I cut off some large branches which were affected with the knot and last summer young shoots grew out from accessory budds five or six feet long and from one-half to three-quarters of an inch in thickness. This is my plan of renewing my trees.

Now, sir, I would like to see a man come into my yard and order me to cut down my trees because he found a small batch of black knot here and there. Had such a thing been done a year ago it would have cut $40 out of my pocket besides the prizes I got at our fall show. I think it would be better for the Association and the Government to teach the people how to grow plums and renew their trees than it would be to destroy the trees. The Lombard plum will take black knot, but what if it dods, it will bear $10 or $15 worth of plums each year by renewing the wood as above.

THOS. HOLLOWAY, *Clinton, Ont.*

NOTE BY EDITOR.—The plan of planting plum trees and caring for them, as described by our correspondent is excellent and should be followed by all who wish to succeed in plum growing, and, while we do not agree with him that neglect causes black knot, there is no doubt that neglected trees are more liable to take the disease than those which are well cared for.



THE SNOW DROP.

The Snowdrop! the Snowdrop!
The foremost of the train;
The snowdrop! the snowdrop!
Who's lustre bears no stain.
In modest beauty peerless
It shows its little bell;
Through frost and snow so cheerless,
Of sunny days to tell

J. W.

Toronto,
March 16th, 1892.