uutil May 20th; however, the prospects of success are not as good as when sown earlier. Turnips are sown usually from June 15th to 25th, the object being to escape the turnip fly, or more properly beetle. The land for either of these crops, when prepared, should be ridged in drills from 25 to 30 inches apart, depending somewhat on the freedom of the soil from weeds, a wider space between the rows making weed destruction easier. To drill the land use a double-mouldboard plow; if you have none, the single plow will answer the purpose, only makes more work in marking out lands. Sow the seed with a drill, using in the case of mangels from 2 to 6 lbs. per acre; carrots, 1 to 3 lbs.; and turnips, 1 to 3 lbs. per acre. On clean soil, with good seed, the lesser quantities are sufficient, but if the conditions are otherwise larger quantities should be used. Too much seed makes more work in thinning; too little causes skips, and the plants do not start as readily and thrifty as where more seed is used. Cultivate with a good scuffler as soon as plants can be seen in the row, and as closely as possible. As soon as plants are easily seen, in the case of mangels, hoe and thin to about 6 or 8 inches apart, and keep thoroughly clean by use of hand hoe and cultivator. With carrots trim the sides off with the hoe, leaving a row of plants in the centre of row; and when these get about the size of a pen stock, either thin with a carrot hoe to 4 inches apart or thin on hands and knees, straddling row, using old bags tied about knees. I find it easier to keep the carrot standing when about size indicated than when thinned smaller. After the turnips have come through, in case the beetles attack them, use a mixture of ashes, plaster and salt, scattered over the plants; this is about the best cure I have tried or seen tried. I expect, however, that in the near future we shall find it profitable to spray the young plants with Paris green. After the plants have attained the rough leaf they should be closely cultivated and hand-hoed to from 10 to 15 inches in the row, and kept clean by use of hand hoe and cultivator; usually only two hand-hoeings are required in case of turnips. The more the cultivator is used judiciously the better for either of the above crops. I have not mentioned commercial fertilizers in connection with root crops, having very little practical experience with them, but am satisfied that it will pay better to use such on root crops than on any other crop which the farmer grows. Salt, especially on mangels, applied at the rate of two or three hundred pounds per acre, gives good results.

As to varieties, I use Mammoth Long Red Mangel, Short White Carrot, and Bangholm and Jumbo Turnips.

GARDEN AND ORCHARD.

Essentials to Successful Grape Culture.

BY JOHN CRAIG, HORTICULTURIST, EXPERIMENTAL FARM, OTTAWA.

I will refer to a few essentials towards successful cultivation in the Province of Quebec and northern Ontario:—

1. Select a warm, loamy, well-drained soil, with a southern exposure.

2. Plant well-rooted two-year-old vines in holes 15 to 18 inches deep, filling up as growth takes place.

3. Train on the two-arm or fan system, preferably the former, in each case starting the branches near the ground, for the purpose of easy winter protection.

4. Make provision for holding the snow on the ground, as well as covering in the soil, till the vines have become well established.

5. Judicious fall and summer pruning, together with liberal applications of potash and phosphoric acid, which can be probably most cheaply obtained in the form of wood ashes, largely aid in obtaining satisfactory returns. A careful selection of varieties is of prime importance in this district of limited summer heat. In our trial vineyard at Ottawa there fruited last year more than 120 varieties. For home use, I would recommend to the attention of amateurs grapes as follows, beginning with black sorts in order of ripening:—Florence, Cottage, Morse's Early, and Herbert or Worden. Red Moyer, Delaware, Lindley, Norwood, and Salem or Agawam. White Jessica Hayes, Lady, El Dorado, Rogers 34, Kensington. These, with the exception of Agawam, Salem and Kensington, are sure to ripen, and are while they may not yield with Champions and Concords in the main, grapes of good quality.

In regard to the methods of training, the system which a man finds the easiest is generally the best, as long as it contains the requisite demands of the grape. The two-arm system and the fan system are both satisfactory, and each have their advocates. I think for localities where vines are covered annually the two-arm system is usually to be found more satisfactory. In this locality summer pruning is very advantageous, so as to hasten the ripening process. In order to keep up the vigour of the vine it is necessary to manure the ground very considerably, and in doing so a rampant growth is induced. This has to be pinched back, so that the fruit will ripen. I may add that in the Experimental Farm vineyard here, we have two systems: one, the French or the pole system; the other, the ordinary trellis plan. The pole system, I find, does not give satisfaction here with vines at this distance and in this locality, planted 4 feet apart and trained to a single stake. They have not sufficient light and heat to allow the fruit to mature properly: but on the trellises they get more sunshine and heat, which tends to bring about an earlier maturity.

A few varieties deserve special mention. One of these is the El Dorado. I think that is the finest flavoured grape that can be grown in this vicinity. I notice that in the Ontario fruit list it is not rated of very high quality, although I cannot understand it, because last year and this year it was not only my own opinion, but the verdict of every body who visited the vineyard at the Experimental Farm, that the fruit was the finest variety in the whole vineyard, and I wish to recommend it, unqualifiedly, for home use.

Experience with Pear Culture.

[A paper read before the last Meeting of the Fruit Growers' Association, by Samuel Hunter, Scotland Ontario.]

I think that of all the fruits we grow in this climate the pear is the most capricious and intricate, ever determined to grow its own way. Some one has written, "bend the twig and bend the tree." That man had little experience in growing pear trees, unless it might be Winter Nelles and a few of that class. They would suit the farmer who planted his potatoes in the moon and wanted to get up there to hoe them. I would add a note of caution to the person who takes to pear growing for what money there is in it, unless he has a love for the pursuit for its own sake. When planting my orchard I did not heed the warning against too many varieties, a rock on which a goodly number have grated.

Location.—While it is well to select a suitable location when a choice is possible, still in most cases we have no choice, and if the soil is lacking in any important quality, we must supply it as far as we can. Such as drainage, shelter, or even qualities lacking in the soil, may be to a great extent made up. Our land is a sandy loam, with limestone, gravel and clay subsoil, naturally drained, with southern exposure.

Shelter.—I plant both evergreens and deciduous trees. Our native Hemlock is a favorite with me, although of slower growth than many others. Our orchard is sheltered on three sides—north, east and west.

Preparation of Soil.—When time permitted I manured and fall plowed, but for the most part I planted the trees and prepared the land afterwards, which answered quite as well, often saving a year's growth in the trees.

Choice of Trees.—When possible I select good sized, thrifty young trees, the wood well ripened. I prefer those grown south of where they are intended to grow; they are not so likely to be black-hearted. I get them either in spring or fall, with a preference for the fall; heel in, but in no case planted in the fall. I can then plant in the spring just as soon as frost is out, which is much earlier than we can get them from the nursery.

Varieties.—The choice of varieties depends so much upon what disposition the grower is going to make of the fruit, as well as the location, that I will say very little about this consideration, especially as there is such a good list of pears given in last year's annual report of this association, and although I have in cultivation about fifty named varieties, I would not like to discard any with two exceptions—that is the Bell and Kieffer. To illustrate—when I tried to sell a few of the last-named variety to Mr. Foster, a well-known fruit dealer of this city, he said, "No, for I tell you when they come to be any good they are good for nothing," and that is more than can be said of Kieffer, for it never does come to be any good at all. I have tried it both here and in the State of Delaware, where it ought to grow to perfection, if anywhere.

Planting.—I only take up a few trees at a time, and keep them covered from sun and air with a horse blanket, and dig the hole larger than will receive the roots and a little deeper; throw two spadefuls of surface soil in the bottom, leaving it a little crowning in the centre; on this let the roots radiate with a downward tendency (after having cut off all broken ends with a sharp knife), and only a little deeper than it stood in the nursery. Most trees are planted too deep. Put in a little fine soil and firm well among the roots; then fill level and pack firm, holding the top a little to westward; head in a little, cutting off all broken and crushed twigs. Trees are usually sufficiently pruned before leaving the nursery to suit me.

Cultivation.—I make a point of keeping the ground well stirred around all young trees for the first two years at least, if situated where I can reach them with a cultivator; if not, I keep a radius of at least three feet from the trunk of the tree hoed until the last of August. I prefer keeping the ground well stirred to mulching—in fact I do not mulch at all; I think it does more harm than good.

Manuring. Give the land a liberal manuring broadcast, the trees will find it. Well-rotted barnyard manure, wood ashes, broken or crushed bone, and if the land is sandy or gravelly, a mixture of swamp muck is good for leaf and wood growth. I have also used considerable horse hoof parings, which I think beneficial. I grow a hoed crop as long as there is room. Corn is a favorite, on account of the shade it offers during the hot weather.

Pruning. In the matter of pruning I find myself in direct opposition to most of the advice given in the Horticulturist. I cannot help it. I would not prune any tree that I wished to live and grow, out of the growing season. I would not prune a scrub oak in winter unless I wished to make it more scrubby. Why just look at those once beautiful shade trees in the parks and streets of this city; the scars of last winter's pruning will not be healed over in the next ten years. I find the best time to prune is when fruit is setting, or a little later, both for growth and fruitfulness, as well as quick healing. To prune in this climate in winter or early spring, whether hard frozen, little frozen, or not frozen at all, is, to say the least, very injurious. I have noticed wounds made from winter pruning to bleed for three years in succession, causing sap rot and attracting borers; and that, too, after the application of a coat of paint. Winter pruning came from across the Atlantic, and although not so injurious there, it is better done in the growing season. I like the pyramidal form of the pear tree with branches coming close to the ground; head in, to keep them from growing too rapidly skyward, and only remove the lower branches gradually. I am fully aware it requires more hand labor to work under them, but you cannot get pears to do well with a tall, bare trunk, like some of the long-legged apple trees you see standing all about with a tuft of branches resembling a broom on the end of a pole. Mine were so treated during my absence, and to this, more than to anything else, I attribute the loss of so many of the most thrifty trees. Better prune none at all than too much or out of season. I was much interested last summer to watch the fight for life with some trees that had been so mutilated; a part of the branches grew straight up and part downwards, forming a sort of cloak to shield the body from the burning sun. They spoke to me in an unmistakable language, as though they felt the pain, and said, "Never allow me to be stripped in that way again." Those that had not vigor enough to thus shield themselves gave up the contest, and I have grubbed out already over one hundred.

Thinning.—I regard this as a very important operation. The pear, like the plum, is apt to overbear, and both for the life of the tree and the quality of the fruit should be carefully thinned.

Experience in Fruit Growing.

BY C. W. BEAVEN, PRESCOTT.

I have been growing small fruits on a small scale for three or four years, and perhaps my experience, though only that of a beginner, may be useful, more especially as I have tried a number of varieties of strawberries for the purpose of finding out what kinds suit my soil best. My experience with some of them has been rather different from that of other writers.

My soil is a dry sand, and the almost constant rain of last summer had not much bad effect on the fruit, except that it made it much softer than usual. I had two-thirds of an acre in strawberries, composed of about 500 plants each of Burt, Capt. Jack, Crescent, Wilson and Bubach. My experience with these was rather different from that of Mr. Hilborn, as given in the ADVOCATE, since the four old varieties were superior in every respect to the Bubach. The latter has several very bad points. It was so soft that a large proportion of the fruit was decayed before it was ripe enough to pick. The fruit stem is short and too weak to hold up the large fruit, and, though in a dry season it is sweet and rich, last year the flavor seemed to be completely washed out of it, and we all pronounced it the poorest berry we had every tasted. The Burt did the best of the lot: it is of good size and color, very firm, rather acid, like the Wilson, and outyielded even the Crescent—in fact, had all my plants been Burt, the yield would have been doubled. The Capt. Jack was the best in quality, and it bears well. I am told, however, that in some markets the dark color is objected to. The Crescent is generally said to be average in size, and so it is on an average soil, but put it on rich clay loam, as one of my neighbors has done, and it will average well with the Ontario, and outyield any of the large varieties.

Besides the above kinds I have small quantities of several other varieties, which turned out as follows:—Jessie is no good; a few large berries and then a few small ones. Cumberland is good while it lasts, but it gives out too soon. Pineapple and Eureka are late, in the sense that they started when the others were half done, but Burt gave a good picking after they stopped. Gipsy was a failure; what few berries were on the vines were small and very acid. Boynton, which was advertised as something extra, I consider a fraud; it is small, and a quart of them would sour a barrel of molasses. Vineland is of good quality and productive. But I think the best of the new kinds is the Shyster, or Shuster's Gem, for I believe both names belong to the same plant. It is large, good color and productive. The Agricultural College at Columbia, Missouri, puts it at the top of the list for productiveness, and also in its list of ten best varieties. Manchester and Cloud failed to stand the drouth of 1891, and I did not have them last year. Manchester rusted badly.

As far as can be judged by my experience of last year, I should recommend the following varieties, in the order I give them, for planting on sand:—Burt, Crescent, Wilson, Capt. Jack and Shyster. Another year might alter this list considerably. I have several other kinds for fruiting this year, but I doubt if any of them will be worth adding to the above list.