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FIG. 1735.

THE LOUISE.

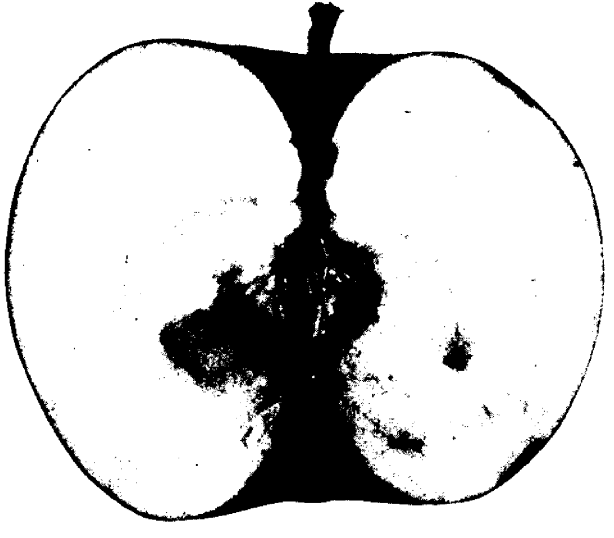


FIG. 1736.

Photo by Miss Brodie.

THE CANADIAN HORTICULTURIST

VOL 23 — 1900 — No 2

✳ ✳ FEBRUARY ✳ ✳

APPLES OF CANADIAN ORIGIN.

WHEN we speak of apples of Canadian origin we touch upon a field of study most inviting to the pomologist and of work heavy with possibilities for the hybridist.

It is now well proven that the fruits of one continent, though of the most exceptional merit, are by no means those best adapted for out of door cultivation in another. The grapes of the Continent of Europe, though of fine size and quality, do not ripen well in Canada, and in our climate are sadly subject to mildew; the apples of Russia, from which so much was expected, are unsuited to our country with a few exceptions, and of the apples of England only a half dozen or so are counted valuable here. Even the old Ribston, so highly valued in England, lacks vigor in Canada and will soon be omitted from desirable varieties in Canadian catalogues.

But we are fortunate in having some varieties of apples, as well as other fruits, which have originated on Canadian soil and which show the possibilities before us. Among these we may mention the Ontario, which originated at Paris, Ontario, and bids fair to be placed among the best export varieties; the Crimson Pippin, which originated near Prescott, and though the orchard of this variety, planted by the originator, Mr. Harold Jones, is almost the only case in which it has been tested, the result is certainly highly in its favor as a dessert apple for any market; the McIntosh Red and the Princess Louise.

McINTOSH, as we may call it for brevity's sake, has been prominently before us for some years. The wonderful beauty and fine quality of this apple at once gave this variety a claim to the front rank as a dessert apple. Its season is about the same as the Fameuse, it is larger and more showy, and on account of its thick skin an excellent shipper. Surely, thought everyone in 1892, this is the dessert apple above all others for us to grow in Canada. Mr. R. A. Shepherd, of Montreal, wrote us that year that the McIntosh Red was the most beautiful as well as the most delicious apple he had seen offered for sale that season. He had tried it eight years and believed it could be grown as suc-

FIG. 1737. McINTOSH.

cessfully at Montreal as the Fameuse, and perhaps more successfully, and therefore he recommended its cultivation in the province of Quebec. The same year Mr. George Bunbury, of Oakville, wrote us: "If we can grow such lovely apples as the McIntosh Red shown at Hamilton I think we ought to do so, as I believe such apples will always fetch fancy prices in England, and I don't think I ever saw such a perfect looking red apple as the McIntosh Red."

But we must be fair and add that this fine variety has the serious fault of being subject to apple scab, which renders constant spraying necessary and much increases the cost of raising fine samples. Mr. John Craig, in 1893, also reported that while the wood was hardy he found it somewhat tender at Ottawa.

The PRINCESS LOUISE has been before the public since 1879, when it was first shown before the Ontario Fruit Growers' Association by the writer as the Woolverton, but afterwards named Princess Louise after H. R. H. the Marchioness of Lorne, on account of its great beauty. The original tree still stands on the "Mountain" side at Maplehurst, Grimsby, and singularly enough the fruit borne by the original seedling tree has not been equalled in beauty by the fruit borne on trees propagated from it, although of the same very excellent flavor.

In September number, 1888, we gave a very good colored plate of this apple, and now we give as a frontispiece an excellent photograph, taken in 1899 by our special artist, Miss Brodie. We also give a technical description of the apple, which may be of service in identification, as we find that in some nurserymen's collections

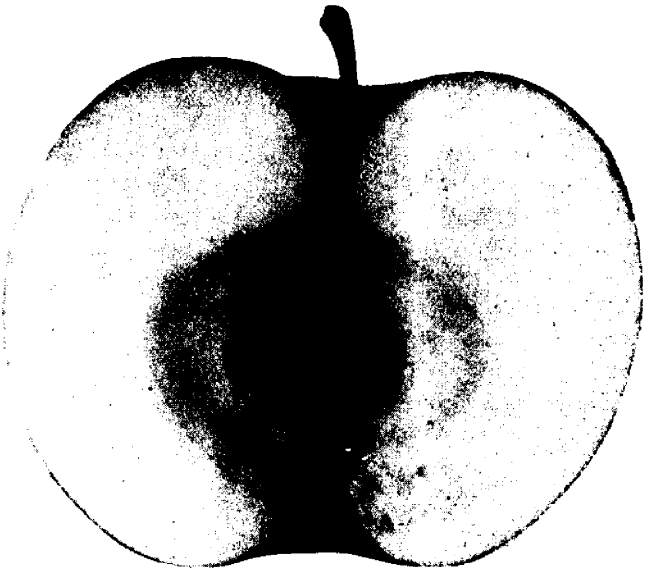


FIG. 1738. McINTOSH.

it has been mixed with McIntosh Red and the varieties have been confused.

PRINCESS LOUISE.

An apple of great value for the home garden as a choice dessert variety, but probably not sufficiently productive to be profitable in the commercial orchard unless it should command a higher price than other apples on account of its excellence.

TREE, of slender habit, fairly vigorous, hardy, moderately productive.

FRUIT roundish, averaging $2\frac{3}{4}$ by $2\frac{1}{4}$ inches in length and breadth respectively; skin greenish yellow, of bright waxy lustre, with cheek of clear, bright carmine; stalk stout, $\frac{3}{4}$ of an inch long, in a narrow, moderately deep cavity; calyx half open, in a broad, shallow, slightly plaited basin.

FLESH, pure white, texture tender, fine, somewhat crisp, juicy with rich aromatic flavor.

SEASON, November to February.

QUALITY, dessert, best; cooking, good.

VALUE, home market, very good; foreign market, very good.

THE CARE OF SHADE TREES.

MANY inquiries were made this year regarding the treatment of shade trees which were showing signs of lack of vitality. In some cases the cause of the unhealthy condition of the trees was plainly due to insects, in other cases to fungi, but most frequently the cause was due to purely physiological conditions, such as unfavorable conditions of the soil, or atmosphere.

The towns and cities of Ontario can point with pride to their beautiful avenues or trees which not only furnish a grateful shade from the sun's rays during the hot days of summer, and cause refreshing breezes to blow along the pavements, but also give shelter from the winds and storms of winter. The larger the town or city the more attractive these trees become by way of contrast with the long walls of naked brick and stone.

But the value of shade trees lies not solely in the shelter and shade they furnish, they conduce to the healthiness, and their value in this connection can scarcely be estimated.

That many of these valuable trees are dying, or are in an unhealthy condition due to physiological conditions, is a fact that requires attention on the part of their owners, and it is the purpose of this article to point out the remedies that may be applied to reinvigorate these trees, and the causes which bring about these undesirable conditions.

1. Trees, like animals, require food, and if the supply gives out they must inevitably starve. One of the chief causes for the unhealthy, dying condition of so many trees is this lack of food supply.

It is true that a tree makes use of the almost inexhaustible reservoir of carbonic acid gas in the atmosphere, and the water in the soil, but it should not be forgotten that a tree requires inorganic food which is absorbed by the roots. A farmer does not expect a crop from soil which contains no nourishment, but, somehow or other, many persons entertain the very erroneous idea that a tree ought to grow and thrive for years upon the food which happens to be in the soil in the immediate neighborhood of the roots.

Very frequently when a tree is planted the earth which has been thrown out in making the hole is thrown back again and packed about the roots. The amount of food in such a case will not suffice for any length of time. Sometimes the tree will live and thrive for several years; then it is because the soil has been richer than usual. Every year the ground for a yard or more should be spaded deeply, and a dressing of well-rotted manure or compost applied. In doing so a constant supply of food will be maintained, and the tree will grow and thrive.

2. A second cause for the disease of vitality in many shade trees is the lack of per-

fect circulation of air in the soil. The vital processes in the roots demand a supply of oxygen, and if this gas is excluded the roots die of asphyxia, *or root rot*. Oxygen is required, not only for growth, but also for the formation of reserve materials. A good florist knows how to provide for drainage in potted plants; he knows that a hard clay bottom is unsuitable. *Too much water* and *soil of too close a texture* will prevent the circulation among the roots and root-hairs, and a free interchange of the atmospheric and soil gases. The best foresters advocate drainage for every tree. Too often the water which is given the tree lodges in the hole made for the tree, so that the soil becomes saturated and aeration is prevented.

When trees are planted along the sides of cement pavements and paved streets as is the case in many of our towns and cities, they

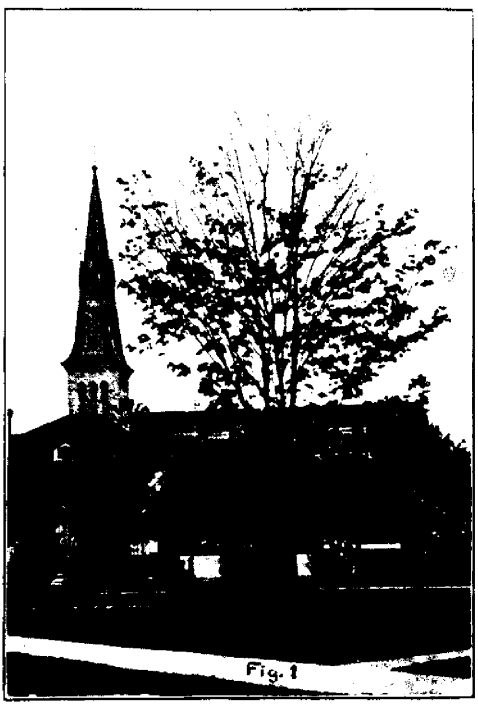


FIG. 1739. MAPLE TREE AFFECTED WITH STAG HEAD.
(Suffering from Lack of Proper Drainage.)

FIG. 1740. MAPLE TREE SUFFERING FROM STAG HEAD
(Suffering from Lack of Proper Nourishment.)

suffer from an imperfect supply of air among the roots. The hard impervious pavement prevents not only a proper supply of oxygen, but also proper evaporation from the soil beneath.

A common form of disease arising from a diminution of the supplies of food and water is *Stag Head*, "when the top branches become leafless, dry off and remain as dry sticks, like antlers projecting above the foliage." The lower branches remain green, but make but little growth.

In the treatment of Stag Head the sod should be removed from a space two or three feet in radius of about the tree. This circular area should be frequently stirred by the spade and kept raked, as this process will tend to promote aeration; but unless provision has been made for proper drainage

when the tree is planted, aeration will be perceptibly checked whenever a prolonged wet period occurs. The young rootlets decay, the tree is weakened and becomes more liable to attacks of fungi, which prey upon the roots.

3. Another cause for the death of many trees is *Sun Scald*, which produces a wilting of the tissues by a too rapid evaporation from the leaves. The tender young shoots are very liable to injury from such a source, especially if they are subjected to a hot sun after a period of rapid growth in moist weather. The edges of the leaves turn reddish yellow, wilt and dry up.

4. A cause which produces practically the same results as Sun Scald is known as *Winter Blight*. The tissues wilt owing to too rapid evaporation during fine, warm days in winter, when the soil about the roots is frozen, or when dry, cold winds prevail.

It is very difficult to provide remedial treatment for Sun Scald and Winter Blight. Perhaps a liberal mulching with manure or straw would be as efficacious a remedy as any that could be devised.

5. Other causes occasionally produce serious results, but only under peculiar circumstances. Sometimes the air of cities and towns becomes poisoned with harmful gases to such an extent that whole avenues of trees are seriously affected. There is of course no remedy available in such a case.

A few words may be said as to the treatment of old trees which are showing signs of lack of vitality. Growth may often be stimulated by assisting nature when the roots have become sluggish. The branches should be pruned so that the demand upon the roots may not be exceeded by the transpiration from the leaves. The turf, moreover, should be removed and the soil given a top dressing of compact earth before replacing the sods, so as to allow the nutrient salts to be washed down to the rootlets by the rain.

All decaying patches or holes should be mended by clearing off all rotten wood, and the place finally closed up with pitch or coal tar to prevent the entrance of fungi.

My second article will deal with the protection of shade trees from the attacks of insects and fungi.

O. A. C., Guelph. W. LOCHHEAD.

WARM AND COLD WATER FOR PLANTS.

SOME of the experiment stations have been trying the prolonged effect on plants of water at various temperatures, from freezing to 100 degrees. The tests have been made at the Wisconsin and Ohio stations during the last two years on a variety of plants, including geraniums, coleus, potatoes, beans, etc., and the conclusion is reached that between 45 and 75 degrees, the temperatures mostly available in practice, no apparent difference in effect is caused with any of the plants tested. Water at 32 to 34 degrees grew healthy, short-jointed geraniums, but sometimes affected the more sensitive Coleus unfavorably. At 100 degrees a weak and spindling growth was caused in almost every instance. The practical point is that where the available water supply in a garden or greenhouse is of a temperature not much below 40 degrees, it will hardly pay to use artificial means to warm it. Cold water, indeed, seems to act as a tonic for many cultivated plants, and glasshouse growers are more and more coming to rely on forcible spraying with cold water to clear growing plants of insect pests. They find that the soil is not appreciably chilled by a reasonable amount of cold water. There are times, however, when the immersion of pot plants kept in a chilly room in warm water is very beneficial, as it renders the fertilizing matter in the soil more available. R. N. Y.

FINE NATIVE ELMS NEAR TORONTO.

LANDSCAPE GARDENING—II.

THE site being secured, the designer must become thoroughly familiar with the nature of the ground and character of the surroundings and the requirements of the client; then, if he has the genius to make his work an artistic success, he will be able to outline clearly in his mind a picture of the completed place, which is in harmony with the character of the ground and its surroundings. His conception will be as clear as that of the artist painter. With the artist it is one thing to conceive a picture and quite another to transfer it successfully to a canvas, and so it is with the landscape architect. There must be with the power of designing a very broad practical knowledge of methods and material available to reproduce this picture, and a skill in making plans for, and in directing work, so that the proper methods may be used and the material so combined that the desired result will be secured. With all his skill the landscape architect must often wait for years to see his picture realized, while the artist may reproduce his in days.

The success of a place depends very much upon the cooperation of the building architect. By working together a result may be secured which would ofttimes be impossible, if they worked independently. Much depends upon a proper fitting of the house to the grounds—in character, outline and elevation—by the architect, and a proper arrangement of roads, walks, and vegetation with reference to the house, by the landscape architect. You might as well expect two

artists, one a painter of buildings and the other of landscapes, to paint pictures independently of each other on different canvases and then to trim them up and fit them together successfully. Not only should the character of the ground be considered in determining the character of the house, but also the character of the surroundings. I know of a modern cottage, constructed largely of rough bowlders with dark-stained and irregular gables and projections, all covered with a growth of vines. It is standing on an avenue surrounded on all sides by stately mansions of cut stone, brick and wood. It reminds me of a countryman in his old clothes at a city ball. He would be a very pleasing and picturesque object on the farm among his cattle and his help—the controlling feature of the scene—but he would look out of place among dress suits, and so did this house among its neighbors.

The character of the place having been determined by the landscape architect, or with his assistance, or it may be by the owner (for the designs of many places have been made and carried out by the owners with most satisfactory results), the location of the house, arrangement of grounds, and construction is to be considered. In these matters it is useless to attempt to establish rules, for it is seldom that two places can be treated exactly alike, even if it were desirable that they should be, and there are no two families with the same requirements. General principles may be stated that can be adapted to varying circumstances. The house will be located with reference to views, exposure, the subdivision of the ground, surrounding buildings and approaches, and this can be properly determined only by a comprehensive study of all these points. A well drained location will be secured, care being taken to avoid a site over, or in the line of, springs. In a house to be occupied in winter a warm exposure for the living room is desirable, but if to be occupied only in summer the cool side of the house should be the living side.

Convenient and comfortable approaches are more important than fine views from the windows. One soon tires of a fine view, if it is secured at the expense of a daily climb up a long hill or long flight of stairs. A fine view is to be sought for and is an invaluable possession, but it will be fully as much appreciated if reserved for occasional enjoyment from a comfortable outlook above the house site, if it is not practicable to secure it from the house and at the same time secure good approaches. In any event, the question of approach will largely govern the location of the house. Too often the landscape architect is only called in to solve the problem of how to get to the house after it is built, this important matter never having been considered up to that time, and then appearing impossible. Many times a very expensive or very awkward, and always unsatisfactory makeshift, is the only way out of the difficulty. The position of the house will depend upon the use the ground is to be put to, and care must be taken that it does not encroach upon areas required for other purposes. An example I have in mind is that of a village lot in the centre of which a house was placed. The proprietor wanted a lawn tennis court, and could have secured it at small expense if the house had been located a few feet to one side from where it was. He had to go without it, as other parts of the ground were required for other purposes.

The subdivisions of a small or medium sized lot, outside of the approaches and yards, would ordinarily be the lawn, a flat surface for tennis or other games, which may be a part of the lawn, the flower garden, and the vegetable garden, of which the flower garden may be a part. The lawn should be the broadest piece of unbroken surface on the place; its position and size would be governed by the shape of the lot,

the amount of land necessary for other purposes, the direction of the view, and the location of approaches. Ordinarily the tennis court would be located on flat land, or land that could be made so readily; on the lawn, or near it, if a grass court; if a dirt court, screened from it by planting. The flower garden should be readily accessible from the house, out of the line of an important view. Its location and character could, and probably would, be varied to suit local circumstances more than any other subdivision of the ground. The vegetable garden would naturally take up its quarters at the back of the buildings near the stable and sheds, and its relative importance will be governed by the desires and tastes of the owner. All this applies to the village lot which is all to be used for home grounds, but the same principles would apply to the home grounds which should be reserved about the farm buildings or about the house of any large estate in the country. There should be a distinct division between this, the home ground, which would be nicely kept, and the cultivated, mowed or grazing fields of the farm. It may be a fence or wall bordered by shrubbery, to one side of which would come the lawn and on the other the farm, or it may be a retaining or ha-ha wall with the lawn sloping from the house to it, and with planting along its borders above the wall.

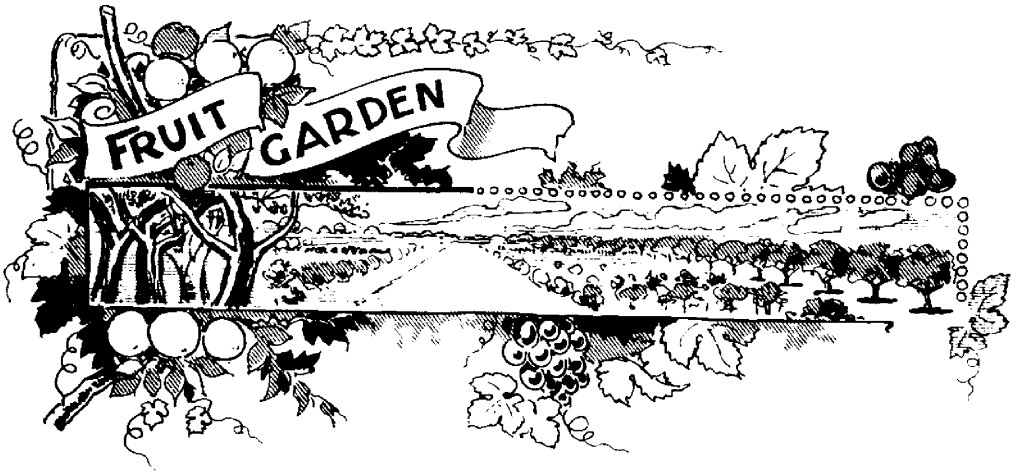
Boston, Mass. W. H. MANNING.

(To be Continued.)

THE WINDOW GARDEN.

WASH THE PLANT'S FACE. Just now, in the depths of the winter's gloom, a thrifty window garden is a comfort and joy, though the actual realization in bloom is not likely to be as profuse as later in February, when the greater power of the sun stimulates a rapid growth. But few additions have been made to the list of practicable window plants during late years, except in the more extended use of palms, ferns, rubber trees and decorative plants of this character. Geraniums and Begonias are universally the favorites, and are grown wherever the night temperature of the living rooms can be kept above freezing. The later geraniums are really magnificent improvements, bearing immense blooms of clear and pleasing colors, and are well adapted for window decoration. At this season the endeavor should be to give them all the sunlight possible; every hour counts in increasing vigor of leaf and flower. Keep them well watered. The dry, hot air of living rooms absorbs the surplus moisture from a pot of growing plants very quickly, and there is less danger of overwatering than is generally appreciated, in case free drainage to the soil has been provided. The foliage, too, should be thoroughly sprayed or sprinkled often enough to keep the plant tolerably free from dust. Dirt and dust on the leaves clog up the breathing pores, and interfere with healthy growth. The window plant often needs a washing just as badly as a boy with a dirty face, and will show a deal more gratitude for it. Managers of amateur greenhouses, on the other hand, are likely to affect the opposite extreme and shower their plants into debility. The air of a small conservatory or glasshouse is easily rendered too damp for the best conditions of plant life during dull weather. Careful and loving observation of the growing plants will soon acquaint one with their peculiarities and desires.

R. N. Y.



FRUIT CULTURE I.*

General Principles.

CLIMATE, LOCATION AND SITE - One of the first things which determines the success or failure of any particular fruit is the climate question. With great extremes of heat and cold we yet have, through a large part of Ontario, a climate which favors the successful production of most of the fruits belonging to the temperate zone - and fruits of the highest quality. The annual temperature of the different sections of the country will naturally have much to do with the successful production of the different fruits. Occasionally a favorable winter may enable a fruit to be ripened outside its usual northern limit, but the minimum temperature of the average year will determine the question as to whether certain fruits can be profitably grown or not. Thus, where the mercury habitually touches 10° below zero, the successful culture of peaches is practically impossible; where the point ordinarily reached is from 15 to 20° below, the growing of the sweet cherry becomes a doubtful experiment, and so on with other fruits. In each species of fruit, however, there are varieties with exceptionally hardy characteristics, enabling them to withstand conditions totally fatal to the rest of the species, and it is this fact that makes the choice of varieties an extremely important point for the planter to consider. Then, within a given district there may be locations so favorable as to enjoy immunity from the more severe frosts affecting the surrounding country. The low temperature of the water in the spring will retard the growth of vegetation, and thus enable the effects of spring frosts to be escaped. In the summer the temperature at night will usually be higher on the lands adjacent to a lake, and in the fall the warmer temperature of the water will lengthen the growing season, and less danger from the early autumn frosts exists. Experience has shown that the most favorable sites for orchards are on lands frequently sloping to bodies of water, and always a little elevated above the surrounding country. This is partly because of the influence of the water; partly from the drainage facilities; and partly because of what is known as atmospheric drainage. It is a fact familiar to most people that the colder air is, the heavier it is, and the low flat areas are usually, therefore, the first to

*This article was published in the last report of the Superintendent of Farmers' Institutes for Ontario, and we republish it for the benefit of readers of the "Horticulturist" by the courtesy of the Superintendent.

suffer from frosts. With regard to the aspect or exposure of orchards generally, this much may be said: Near large bodies of water the most favorable exposure is on the slope towards the water. In a district away from water a northern or northwesterly exposure is the best, as the blossoming period is retarded and danger from spring frosts escaped. The slope, however, must not be too pronounced, or too cold and backward. Account must also be taken of prevailing winds, and a few words may be advisable here as to the use of windbreaks.

WINDBREAKS.—The value of windbreaks for the orchard is a much debated question, full of pros. and cons., only a brief summary of the main points will be possible here. The gradual removal of forests in Ontario has rendered the sweep of winds over the farm lands more violent and more noticeable. Winds acquire, to a greater or less degree, the temperature of the area over which they pass, thus modifying the climate of every new district touched. Hence a strong wind from an open body of water will raise the winter temperature of the adjoining land, while wind from a colder area may have a disastrous effect. Wind is a powerful agent in the evaporation of moisture, and, apart from the more rapid evaporation in an open country during the summer, a strong dry wind may have an appreciably bad effect on fruit trees by evaporating the moisture in dormant twigs during winter. The value of a windbreak evidently, therefore, depends on the direction and character of the prevailing winds. Where strong land winds are of frequent occurrence, a windbreak is clearly advisable. To quote from Bailey: "The benefits derived from windbreaks are, lessening of evaporation from soil and plants; protection from cold; lessening of windfalls; lessening of liability to mechanical injuries of trees; retention of snow and leaves; the enabling of trees to grow more erect; lessening of injury from the drying up of small fruits; retention of sand in certain localities; hastening of maturity of fruits in some cases; encouragement of birds; ornamentation."

The injuries from windbreaks are as follows: "Preventing the free circulation of warm winds and consequent exposure to cold; injuries from insects and fungous diseases; injuries from the encroachment of the windbreak itself; increased liability to late spring frosts in rare cases." This is a clear statement of the advantages and disadvantages of windbreaks, and the evidence is strongly in favor of windbreaks, unless they are unwisely planted so as to exclude warm winds that are often a fruit grower's salvation during a severe winter. The common objection to windbreaks, viz., that they harbor all kinds of bad insects and tend to encourage fungous diseases such as mildew, scab, etc., has some strength, but with the intelligent use of a proper spraying apparatus this objection loses its chief force, and care can also be taken that such trees as are especially infested by injurious insects and fungi are left out of the plantation. As a general rule a mixed windbreak is advisable of two or even three rows. It should usually be not too dense, checking the violence of the wind rather than excluding it altogether. Norway spruce, Austrian and Scotch pines are effective; and amongst the deciduous trees those should be used which are most healthy and thrifty in the locality.

THE SOIL QUESTION.—Having decided as to climate, location and exposure, it would become necessary to consider the matter of soils for fruit, and under this head "drainage" and "tillage" will also be referred to. It may be said in the outset that nearly all soils so far as their mechanical texture is concerned will produce with fair success the various fruits, provided that the necessary conditions of fertility, proper drainage and cultivation are fulfilled. The fulfilling of these conditions, however, becomes a some-

what expensive and laborious matter in some cases. And other things being equal, certain fruits will undoubtedly thrive better on special kinds of soils, and even different varieties of the same species of fruit have their soil predilections. So that it is better to ascertain the nature of the varieties to be planted, if possible, before giving them an uncongenial home. The kinds of soil best adapted for the cherry, the pear and so on will be touched on in the chapters devoted to those fruits. Any man who has decided to plant fruit trees of any kind should at once make up his mind that no matter how good the site, or how valuable the variety, his time and money will inevitably be wasted if his land is not properly drained. Some trees may exist under adverse conditions of this sort, may even partially succeed for a time, but "failure" must be the final word. A porous soil, soils of a sufficient elevation to provide good natural drainage, these with care may give excellent results, but broadly speaking underdraining will always abundantly repay its expense in the case of practically all fruits. Amongst the many benefits derived from the proper system of underdraining are the following: The raising of the soil's temperature; the freeing of all surplus water from the subsoil; the liberation of much plant food, which though in the soil otherwise remains inaccessible to the feeding roots; the making of the soil both moister in a time of drouth and drier in time of excessive moisture. On land well drained the root system of the tree is not only vastly more healthy, but the feeding rootlets commence work earlier; the tree makes a more rapid and vigorous growth, and is in a far better position to develop plump sound fruit buds and to ripen its wood for the winter. These are great gains, and under ordinary conditions the orchardist who has once experienced them will not be likely to neglect the underdraining of other lands he intends to plant.

M. BURRELL,

St. Catharines.

(To be Continued.)

NUMBER OF TREES ON AN ACRE.

30 feet apart each way	50	10 feet apart each way	435
25 feet apart each way	70	8 feet apart each way	680
20 feet apart each way	110	6 feet apart each way	1210
18 feet apart each way	135	5 feet apart each way	1746
15 feet apart each way	195	4 feet apart each way	2725
12 feet apart each way	300	3 feet apart each way	4840

RULE.—Multiply the distance in feet between the rows by the distance the plants are apart in rows and the product will be the number of square feet for each plant or hill: which, divided into the number of feet in an acre (43,560), will give the number of plants or trees to an acre.

THE USE AND MISUSE OF THE PRUNING KNIFE.

A WRITER in "Gardening World" treats upon the above subject, and certainly it is a most seasonable one for us also in Ontario, because during the mild days of early spring the larger part of the pruning of orchard trees is done by our fruit growers. Our English friends are well trained in the art of pruning, and we might learn much from a study of their methods. As a matter of fact many of our fruit growers have no ideal or system; they have a vague notion that the tree has too much wood and must be thinned, and they go to work with saw and axe in the most reckless fashion. Such men are well named "tree butchers," and often do more injury to an orchard than can be remedied in years of patient nursing.

Some orchardists we have met, very carefully cut off the fruit spurs along the main limbs, making them as clean as a boat mast, and about as free from fruit. Others cut out great limbs from the centre causing a forest of sprouts or from the sides of the trunk making the tree almost inaccessible to a ladder.

Such work is a waste of energy both of tree and man, and we hope our Agricultural Colleges will soon man our farms with men who will have some training, and who will do their work intelligently.

Our orchard trees do carry too much wood, and do need thinning, but it needs to be done with an eye to the symmetry of the tree, and to an even distribution of the fruit. Even a neglected orchard must not be butchered, it must be gradually brought to an ideal condition and not all at once. Large limbs must not be cut, for the wounds will result in hollow trunks, and premature decay. Patiently remove a portion each year until the proper condition is reached: not by removing large central limbs, but by thinning the smaller ones on the outside of the tree head in every part. This is much more laborious than cutting out at the centre, but is much more sensible, because it is done at the point of growth and productiveness.

The thinning of the fruit may in this way be partly accomplished as well as the thinning of the wood, two objects of equal importance.

Plums and pears are much inclined to grow long sprawling limbs, which should be cut back to form a symmetrical tree; and in the case of pears we always allow a few side shoots along the trunk which may be grown into a new top in case of blight. In case of dwarf we aim at the pyramidal form of the tree which is less inclined to be blown over with the wind, more convenient for fruit gathering, and more symmetrical than any other form.

Peaches should be well cut back every year, and the dead or weak branches cut out of the interior. Too much stress cannot be laid on the importance of all this work in the production of high grade fruit, which is so important just now for success in capturing the British market.

Fraser, the writer above referred to, writes on this subject as follows:

"It would be interesting to know what idea actuates the mind of many of the great army that wields the shears, the hedge-bill the saw, the secateurs and the pruning knife. It may be, and no doubt is, the case that many of them are victims of mistaken notions, like the apprentice who was set to grind the tools in his master's absence one day; and, when asked at night whether he had ground all the tools, replied in the affirmative, except that he had not been able to grind down all the teeth of the big saw. To make a guess at the intentions of some pruners of deciduous trees whose handiworks we have witnessed, one would imagine that they had been sent to give the trees a good hacking; and if so, they carried out their orders to the letter. The jobbing gardener is often blamed for his accomplishments, but he is no doubt a victim of the order to tidy up the place, and give the inmates room to perambulate in the narrow con-

fines of their gardens. Many owners desire to have gardens, yet from lack of knowledge and intimacy with the varying laws of Nature in each individual case of the trees or shrubs, they proceed to work or give orders in such a way as to show an utter lack of sympathy with the subjects in hand.

"We have seen a pear tree on the walls of a house, and one who was supposed to be an experienced hand was set to prune it. Not only was the breast-wood hard cut back but the spurs were cut back too, quite irrespective of whether there was fruit buds below the cut or not. This as a matter of course precluded the possibility of fruit the following season. Quite recently we heard of the good wife of a house taking a fit of gardening in her lord's absence, and pruning the side shoots of the vines hard back to the main rods, and that too while they were yet far from mature. Possibly she had been reading about the installation of the new Adam in the gentle art of gardening, and had felt justified in coming to the support of the new profession. There are those whose conception of pruning is to shear in the bushes equally on all sides, whether evergreen or deciduous, so as to make them as uniform as possible. There is another kind of uniformity that is equally offensive to the eye, and altogether objectionable. This is the practice of pruning large trees all to one uniform shape, not merely that straggling branches may be headed back, to make the trees more compact and symmetrical according to their kind, but to fashion them according to one preconceived ideal. When such trees are leafless they are often strongly suggestive of scarecrows. The system of pollarding trees, especially Willows, in wet meadows is so common in the south that many have come to look upon such artificial creations as the right and proper thing. Naturally grown trees are, however, infinitely superior in every way, more graceful, more umbrageous, and more handsome, whether seen from near or from far in the landscape.

"There should always be some object in pruning, though we feel that every wielder of the knife would be ready to affirm that he was guided by that aim. If the object is that of utility or ornament, the hand must be guided both by reason and taste in the latter case, and at least by reason in the former; otherwise there can be no intelligent pruning. In the case of fruit trees a considerable amount of skill and judgment are necessary to treat each variety of tree according to its natural inclination to produce fruit buds at particular places of the previous year's growth or otherwise. There is a considerable amount of variation even in this respect amongst apples. Trees belonging to other species and genera also require sympathetic treatment, and he cannot be considered a skilled or expert fruit grower who has not carefully studied all these peculiarities.

"Flowering trees and shrubs require equally skilled treatment to secure the best effects they are capable of producing. It may be as well to remember here that sub-tropical effects from foliage are sometimes desired, and that in this case pruning consists chiefly in cutting the branches hard back so as to encourage the development of rampant growth, for upon such the size of the leaves depends. Large leaves, each according to its kind, can only be obtained upon strong young wood, and the pruner is guided accordingly. When he is sent with his ladder, hammer, nails and shreds to prune flowering shrubs upon walls, a task has been set him that is not easily accomplished, if he is to acquit himself properly of the task, unless he has previously been a keen observer of the habits of each respective species. Unless accompanied and closely superintended by a skilled hand, he is apt to overlook the fact that one tree may flower from the wood of the previous season, it may be in the spring, while another may flower on the young wood produced in summer. Should the present time be adopted for the pruning of wall, the wielder of the knife must not prune away the young shoots of Chimonanthus fragrans, Jasminum nudiflorum, Forsythia suspensa, Prunus triloba, nor Ribes speciosum, as all these flower on the wood made the previous summer. The first two mentioned would have been in flower by this time but for the un-

genial weather. In the warmer and more favored portions of the country this may have taken place. Their pruning must be deferred till flowering is over, after which they may be hard cut back if strong and vigorous. They can then be reduced within proper bounds. In the case of weakly specimens of Chimonanthus it is better to leave a sufficiency of wood to cover the nakedness of the walls. The pruning of Lonicera sempervirens and many Roses may be accomplished at once if they are perfectly hardy, making allowance for those roses which flower all along the wood of last year on the side shoots of the same. Lilacs, Guelder roses and Mock Oranges should receive the necessary pruning after they have finished flowering in summer."

A SMALL ICEHOUSE.

NOW that we have found how important a feature of a fruit storage house cold air forms, every enterprising fruit grower will be interested in providing means for its production. By and by, when liquid air is a commercial article, no doubt we can do away with frozen water, but in the meantime it is important to lay in a supply of ice and this is usually the best month for storing it. Dierhold, in American Agriculturist, gives valuable hints intended for a cheap family ice house, but the principles are the same as for a larger one, so we give them place :

"So far as ice is concerned, the best economy is to use it in profusion. Have as much as you want, but cut and store the ice yourself, or buy it at wholesale in winter, when it is cheap. Every family that has room enough out of doors for a small icehouse will save money by building one. It should be as much a part of the establishment as the refrigerator in the kitchen. Ice melts faster in free air than in confined air, faster in water than in confined air and faster in the sun than in the shade. It will melt in any icehouse. It simply melts slowly in a good one and rapidly in a poor one. Reduced to its simple elements the success of an icehouse depends upon site, drainage, ventilation and construction. The best site for a family icehouse is some shady place under a tree, or the north side of a building which is also protected from the wind. Shade is of the first importance and shelter from the wind the next, so, if there is a choice, take the shady place. If a good position cannot be found, put it anywhere. The melting ice in the house causes a constant flow of water. If the soil on which the house is to stand is sandy or gravelly, and has a gentle slope, there is nothing to do but dig a cellar about two feet deep and fill it with stones. Cover the upper layers with small stones and sand. This will make the floor on which the ice is to rest. The water will escape easily through the sand and stones and there will be no chance for currents of air to flow upward into the house.

The tendency of the air in a badly made icehouse is always to flow through it. Therefore, while there must be drainage, there must also be an absence of inlets for air. If the soil is wet and not easily drained, the surface must be covered two feet thick with stones and the house placed on top of this. If this is done, the sides of the stone work must be made tight with mortar to prevent the entrance of air. If provision must be made for carrying off the water, the pipe must be trapped to prevent the air from entering the pipe and thus getting into the house.

A well drained foundation having been prepared, a wooden sill must be laid, on which the walls are to rest. On this sill will rest the uprights. These may be simply planks eight inches wide and two inches thick. They may be placed at intervals on the sill and held in place by a stringpiece on top. On the outside of the uprights may be nailed boards with battens or clapboards. On the inside they are simply boarded up with cheap stuff. The whole aim is to make a hollow wall. The space between

the outside and inside boarding must be filled with tanbark, sawdust or rough chaff of any kind. Upon the walls place a common pitch roof, boarded and battened or shingled. It must be rain tight, but must not be air-tight. There should be an opening at the ends, or a hood or ventilator, to permit a free circulation of air through the upper part of the house. The door should have double walls filled with sawdust. These, in brief, are the conditions: Perfect drainage, double walls filled with sawdust, no entrance for air below and free ventilation above.

The ice should be laid on a foot of sawdust or chaff and a space of 12 in. all around between the ice and the wall should be filled with sawdust, as well as all the cracks between the blocks. When it is all in the house, sawdust is spread 2 feet deep on top of the ice. The cost of an icehouse must vary with the price of labor and materials. A house 12 ft. square and 10 ft. high will hold enough ice for one family and certainly will not cost much money to build. An icehouse should always be painted white, and if convenient it should be covered with vines, which will partly neutralize the heat of the sun's rays."

THE ANJOU PEAR.

ONE of the most satisfactory export pears thus far tried is the Anjou. Its large size, attractive yellow color when ripe, its fine juicy texture and excellent quality make it a valuable late fall pear in any market, while its shipping qualities make it most valuable for distant markets. As a standard it is not very productive, and the fruit is much smaller than when grown as a dwarf. Whitcomb in "Country Gentleman" gives his experience on this point as follows:

"Among a number of hundred which we have in bearing, and which were set in the '70s, there are a few which correspond to the views of the leading orchardists at the present time; and that is, that better results follow if planted on quince stock. We have taken particular notice of the fact, even before and since the ravages of the pear psylla, that these trees have proved more prolific, and as a rule are much more certain of being annual bearers.

These trees, if planted on quince, must be planted very deep in order that the young stock, after becoming well rooted, will soon begin to take on a new set of fibrous roots, from above the union, which will be of the pear stock, and not of the quince. When this is done, the tree is much more self-supporting by the growth of the stronger roots which come from the pear stock, thus preventing it from being tipped over by the prevailing winds. Also, this tree will practically be headed without any height of trunk whatever, and at the same time with nearly if not quite as large a top. And in this instance the strongest reason for not growing the Anjou pear is overcome, namely, that of being so easily blown off. The trees are put five or six feet nearer the ground and thus escape the swaying produced by heavy winds. In fact, this has become so well established that one of the leading nurserymen of the state has top-worked over an old Duchess orchard in the manner described to an Anjou orchard.

The advantages in spraying are also such as commend this practice to common use, as the trees are much lower and much more conveniently covered with spraying materials. A good wind-break is also considered by reliable authorities to be of great use in keeping this kind of fruit on trees until proper time of picking. This fruit well grown is universally a good seller, which makes it attractive from a commercial standpoint."

THE REINE CLAUDE is undoubtedly the finest of all plums for pies and preserves. Its flavor is most agreeable and its color an attractive yellow. In France this plum is grown in immense quantities for the Paris market.

REPORT OF THE SAN JOSE SCALE COMMISSION.

THE report of this Commission is just to hand, signed by Dr. Mills and Messrs. Dearness and Bunting, three excellent men in whom the fruit growers have every confidence. The recommendations of the Commission are very much in line with the resolution passed by our Association at Whitby, and help to evidence the propriety of our position. The Committee had visited Catawba Island in company with Prof. Webster of Ohio, an island which is a continuous orchard for miles. Here 3000 or 4000 badly infested orchard trees had been removed in a block, and the surrounding orchards, which were not seriously infested, had been treated to whale oil soap—from one to two pounds to the gallon. The result of the treatment is very encouraging, for the treated orchards had taken on an exceptionally healthy and vigorous appearance, and although the scale had not yet been totally exterminated, it had not done any damage since the treatment began. Indeed the owners claimed that the treatment had been a blessing to them, not only in destroying the scale, but causing the trees to take a new vigor, through being cleared of insects and fungi, notably bark-lice and curl leaf.

It was Prof. Webster's opinion that persistent treatment would effectually exterminate the pest in the course of a few years.

Among other good points in the report, the following suggestions regarding future methods of procedure will be read with interest:

1. That the work of inspection, in a modified way, be continued for some time.

2. That the knowledge of sub-inspectors be tested, and none but certified and approved men be employed.

3. That the inspector be authorized to destroy at once all trees and shrubs which show signs of serious injury from the scale, or have their trunks and principal branches incrusted therewith.

(*b*) Badly infested trees and shrubs of unprofitable varieties, or in unhealthy condition, even though not very much injured by the scale.

(*c*) Single infested branches or limbs on trees which appear to be otherwise free from infestation.

4. That all infested trees and shrubs, except the above, and all exposed trees and orchards be thoroughly treated according to the most approved method.

5. That large discretionary power be given to the inspector in dealing with isolated infectation in districts that are otherwise free, or supposed to be free from the scale.

6. That in order to secure effective treatment the work be done by the Government, but the owner be required to pay for the material and board the men and horses during the time of treatment, with the proviso that this course is only to be pursued with infestations discovered after that date be destroyed without compensation, or treated wholly at the expense of the owner.

7. Provides for frequent treatment in summer time of badly infested trees in foliage, which involve risk to neighboring orchards.

8. That the inspector be authorized to order the destruction of small trees and shrubs growing in fence corners and other places, where in his judgment, the removal of such growth is necessary to check the spread of the pest.

9. That owners be paid one quarter of the value of their trees without discount, and that the fruit on a tree be regarded as part of its value.

10. Provides that the method of valuation be modified so that the owner may be represented.

STOCK JOBBERS are already in the field offering a gullible public shares in liquid air stocks, much as they have recently been reaping rich harvests selling "salted" mining stocks. We warn our readers against all such tricks to get their money.

NOTICE OF THE HARDY FRUITS OF UPPER CANADA.

To the Caledonian Horticultural Society
*Edinburgh.**

DURING my residence in Upper Canada I had frequent opportunities of seeing and admiring the profusion of fine fruit produced in that country, the apples in the orchards are particularly fine. accustomed as I had been to see fruit-trees in general raised only from grafts or buds, I had no idea of the facility with which apple trees can be raised from seed, and in a very few years in that fine climate, produce abundance of excellent flavored fruit. There are many of the trees, however, that produce fruit fit only for cider, which are more valuable to the inhabitants than the fine sorts, as they can find a ready sale for their cider which they could not do for their apples, were they ever so fine flavored; and for that reason they are at no trouble in selecting their seed from the finest kinds, or grafting or budding from them.

The inhabitants of Lower Canada seem to have paid considerable attention to the cultivation of fruit-trees for a length of time, as may be judged from the fine specimens of healthy old trees that are to be seen in their orchards. They cultivate several kinds of very fine apples, which have probably been introduced from France, particularly the Pomegrise, Bourassa and Fameuse; they are also beginning to cultivate several varieties that have been grown from seed in the country. I have no doubt whatever, that, if proper care is taken in saving of the seeds, seedlings will be procured so similar to the original in appearance and flavor that the difference would not be easily detected. I was informed that the island of Montreal, about thirty years ago, was much famed for the quantity and excellent quality of its pears, but now there are very few of that fine fruit in the country, part of the young ones are in an unhealthy state, and no person could assign any cause for this general decay of their pear trees. The Kentish cherry succeeds better than any other that I have seen cultivated in any part of North America that I have visited; they produce fruit in great abundance, and certainly better flavored than in this country. They are propagated from suckers chiefly, which leads me to suppose that the original trees have been propagated from seeds imported from Europe. I have seen good crops of some other kinds in Kentucky and Virginia, viz., blackhearts, May dukes, etc.; but there the trees are much injured by the intense heat of the sun, and most kinds of cherry trees grow very erect, from which circumstance the foliage can yield no protection or shade to the stem or trunk of the tree, and in a few years it will be completely decayed, except a small piece of wood and bark on the north side. I observe that the branches that were shaded from the sun by their own foliage had sustained no injury from the above cause.

Peach trees succeed tolerably well in Lower Canada on walls; in Upper Canada, particularly on the Niagara river, they succeed very well as standards. They grow with great rapidity, but very little attention is paid to them; they are all raised from seed, and many will produce blossoms, if not fruit, the third summer. A few are large and fine flavored fruit, and many tolerable.

Quinces, on the Niagara river, produce generally a good crop. They are certainly a finer flavored fruit than those produced in England, being free from the disagreeable smell that the English quinces have, and are esteemed the best fruit for preserving in that country. The trees are remarkably dwarf, which I suspect is owing to the method they have in propagating them, which is altogether from cuttings, and these are generally branches of considerable size, and planted in the spring.

* This paper is one that I picked out of a book of the minutes of the Royal Caledonian Society, Edinburgh, read at that Society's meeting in the second year of its existence by one of its directors, when the King was one of its patrons.

RODERICK CAMERON,
Niagara Falls.

NOTES ON SMALL FRUIT CULTURE.

CURRANTS.

CHERRY.—Is the largest and most showy of all red currants, but with me it has been a failure. The bushes grow very heavy soft wood, with soft pithy heart. The currant borer eats all the centre out, causing the wood to die. Shoots that escape the borer bear well.

WHITE GRAPE.—With me has always been a success for the last twenty-five years, giving me an average crop even in frosty seasons when other kinds has been a failure. The bushes grow somewhat dwarf and are covered with a very heavy coat of leaves, and the limbs droop over each other so that they protect the fruit from late spring frosts almost entirely. Fruit and bunches large. Excellent for table use, not so acid as the red varieties. Will hang on the bushes till October.

FAY'S PROLIFIC.—Is a fine free grower, bearing large, showy fruit of good quality, but on my soil seldom produces an average crop.

RABY CASTLE (OR VICTORIA).—Is a very rapid strong grower and a very heavy bearer of long bunches of medium size fruit of good quality. Some of my bushes are eight feet across and yield from thirty to forty quarts each. It is decidedly the most profitable of the red sorts. Hangs on the bushes till late in the season without spoiling.

BLACK CURRANTS of all kinds are a failure on my soil. The bushes grow well, but never produce a paying crop. I believe the cause of failure to be too dry a sub-soil, my land being at the depth of from two to three feet underland with dry, loose gravei.

STRAWBERRIES.

BUBACH.—I received from our F. G. A. some years ago, but I did not make a success of it. It bore well when I could get good young plants; some seasons I failed to get good young plants almost entirely.

MARSHALL.—Is a large, fine showy berry. Quality very good. Gives here only a moderate crop. Makes plenty of strong young plants every season. I find it somewhat tender in winter.

BRANDY WINE —Fruit large and handsome. Quality good and a fair bearer. It sets plants well and winters well. It ripens late.

PARKER EARLE.—Is a late variety, medium size, excellent flavor and very firm. Not productive enough with me to be profitable.

JAMES VICK.—Has been the best and most profitable berry on my soil that I have yet tried. The plants are very strong and vigorous. It sets plenty of young plants that winter well. Blossoms late, so that it is seldom hurt by spring frosts. Fruit large. If plants are given plenty of room it sets such a quantity of fruit that unless plants are well thinned the fruit will be small. The fruit stems are strong and hold the fruit well up from the ground. Berries are firm, quality very good and will keep longer on the vine than most sorts.

St. Mary's, Ont. S. H. MITCHELL.

THE BEN DAVIS IN N. S. AND P. E. I.

WHILE Rev. Father Burke, of Prince Edward Island, and Mr. S. C. Parker, Secretary of the F. G. A. of Nova Scotia, agree perfectly as to the thrifty character of the Ben Davis in Nova Scotia and Prince Edward Island as elsewhere, there would appear to be some grounds for Senator Ferguson's remarks commented on by those two gentlemen. The Hon. Senator had been attending exhibitions and possibly conventions in Nova Scotia, where no doubt several speakers held the views he took up. The esteemed Secretary of the

Nova Scotia Association seems to have overlooked in his interesting article of last month a discussion given in his own last annual report, page 97, where this occurs *inter alia :*

" John Donaldson : With respect to grafting the Gravenstein on the Ben Davis—the latter is a *slow-growing tree.* I am afraid Gravenstein would grow out of Ben Davis. I have grafted Gravensteins on the Cayuga Red Streak.

" Professor Sears : I only gave the matter as an example. I have not thought it out. *But your objection is a good one.*"

With those opinions openly expressed in convention and printed in the annual report of the F. G. A. of Nova Scotia, then it is not strange that Senator Ferguson acquired this impression that Ben Davis was a *slow grower* in Nova Scotia. Mr. Donaldson may have been mistaken, but in our official reports it will be well always to revise the discussions carefully and see that no unreliable information is let out uncorrected, for the inexperienced, looking for information, will accept such and have a right to accept such reports as thoroughly reliable. But it is satisfactory to know now on the best authority that the Davis is a " grand grower " and a grand bearer in N. S. and P. E. I.

A. E. BURKE.

Alberton, P. E. I.

SIR,—I notice on page 483 of the December number, from A E. Burke, that Senator Ferguson went home from visiting us during the exhibition with the idea that in Nova Scotia the Ben Davis tree was regarded as slow growing, delicate and of short duration. I can assure the genial Senator that he carried away a very erroneous impression of the popular idea in Nova Scotia concerning the Ben Davis. Certainly public opinion here would concur with Mr. Burke. The Ben Davis tree in Nova Scotia is a rampant grower, a remarkably early and prolific bearer, hardy and healthy, always clean and thrifty. If any person thinks its career will be short, and many do, it is because of its poor quality. We fear that when it becomes well known in the English market it will fail to sell. While on the authority of Prof. Craig, in Gravensteins and Ribstons the Annapolis Valley has no equal on this continent, it seems like tempting Providence to plant an apple that as grown with us is at best third class and much inferior to the same apple as grown in the Middle and Western States.

Personally I am of the opinion that Stark is fully equal to the Ben Davis as as a grower and bearer, and being larger will be a more profitable apple.

Berwick, N. S., Dec. 20, '99. S. C. PARKER.

COLD STORAGE FOR FRUIT GROWERS.

THE fruit farm is the proper place for the cold storage of fruit. This is the consensus of opinion of all authorities. There are many reasons, but the one which appeals most to farmers and sellers is, that with cold storage on the spot, the fruit will not be damaged in handling before it reaches cold stores in the selling centres. Another thing : with the farmer having a knowledge of cold storage he will be more careful of his own harvest in putting it where it will keep. He will reap the profits consequent on the rise in prices where he only only received the market value of his product. This will be added to the value lost in deterioration caused in transit. Thus the grower will, with his own cold stores, obtain from one-third to one-half more for his crop than he would if he possessed no storage facilities.

In the grape districts in Western New York the growers have their own cold storage, and they have found that the grapes picked from the vines and carried direct to storage keep much better and longer than any put in cold storage in the cities. These grapes can be marketed in the middle of winter without much loss from waste.

THE PEACH.

THE Kansas State Horticultural Society has published a volume on the peach, giving very complete directions for planting, care, gathering, and marketing this fruit. A considerable amount of the matter is unsuited to Ontario, but we make a few extracts of portions that are applicable to our conditions.

SOIL.

The soil for a peach orchard should, if possible, have a good clay subsoil, naturally well drained, and be rich enough to produce a fair crop of wheat or corn to the acre.

Some people appear to think that if they have an old field that is so exhausted it will not produce profitable farm crops any longer, and is washing into gullies, there is the place to plant an orchard. No greater mistake can be made. If you are not willing to devote good land to the orchard, our advice would be to let the business alone. In the region of country for which I am writing we find that the so-called red lands, as well as the grey, and those that are composed of sandy loam with a clay subsoil, all produce first-class peaches.

PREPARATION.

The entire surface should be plowed deeply before planting; then check each way with a plow, planting where the furrows cross each other. Dig the holes sufficiently large to admit the roots without cramping. In locations where the subsoil is poor, it is advisable to dig a hole, say three feet in diameter and eighteen inches deep, and then fill up with good surface soil, leaving the excavation that is to receive the tree of such a depth that the tree, when planted, will be about the same depth, or a little deeper, than it grew in the nursery. The proper distance apart for planting is from sixteen to twenty feet each way. In orchards with sloping or uneven surface we generally recommend locating the rows as near a horizontal line as practicable, about eighteen feet apart, and the trees in the rows sixteen feet apart.

VARIETIES.

The selection of varieties for the commercial orchard is a point that is vital to its success and in making this selection there are a number of considerations that demand our attention. While I do not condemn new varieties, yet it is wisdom on the part of the commercial grower to "touch them lightly" until he has tested them himself, or they have been tested by others in soils and locations similar to his own. Then there is the matter of hardiness in fruit, and consequently greater certainty in producing regular and paying crops. For while a variety may be beautiful in appearance and first-class in flavor, it may, on account of its unproductiveness, be unworthy of a place in the commercial orchard. The grower should also study the markets that he wishes to supply. that he may learn what style of peaches is most in demand in these markets. He should also study the production of other peach centres with which he may be brought in competition. For instance, if some other favored locality sends, at a certain season, large quantities of some leading, first-class variety to market, it would not be wise to endeavor to compete with them at the same season with any variety in the smallest degree inferior to what they are sending in such large quantities to the market.

The commercial grower should therefore confine his list to a few varieties. If the fruit is being grown for a home market, then, of course, a great range would be admissable. . . . A good reason for planting only a few varieties is that this will enable the grower to have his fruit carried to the market at less expense. Having large quantities to ripen at once, he can ship by car-loads. The difference in cost between this method and express, affords quite a profit in itself. If I were planting an orchard of only 5000 trees, and had no one at the same

shipping point to unite with in making shipments, I would plant only one variety.

PRUNING.

The work of pruning begins before the tree is planted; first, all broken and bruised roots should be cut back to sound healthy wood, with a sloping cut on the under side of the root, always using a sharp knife.

If there are any side branches they should be cut off, leaving a single straight stem, cut off at the height of one foot to eighteen inches from the ground. There are many good reasons for having our orchards branched this low. When the trunks are shaded they are less liable to disease. With no long trunk for leverage they are less liable to be blown over by storms. When trained with low heads, pruning, thinning and picking can be done for a tithe of the expense involved where the workmen must use ladders to enable them to reach the high and widely extended top.

The planter should aim to have four or five well-developed buds on the upper part of the trunk when planted, as the new branches grow from such buds more readily and vigorously than from those near the base of branches that have been cut off. Three or four of the branches that grow out the first season will be needed for the framework of the future tree.

By rubbing off as soon as started all superfluous shoots the grower can, to some extent, economize growth, but if not rubbed off they can be cut out at the first pruning after the tree has attained a year's growth.

During the latter part of winter, before the trees start into growth, all shoots not needed for the permanent head of the tree should be cut out, and those left (which should have attained a length of three to five feet) should be cut back to two feet or two and one-half feet.

It has been customary to cut back even shorter than this, say to one foot or eighteen inches, but the tendency of such very close pruning the first year is to have the tree too dense, its leading branches too close together. Each of these main branches will, the second year, throw out leaders, each of which will make a growth of four to six feet. At the second annual pruning the first aim should be to establish a broad, low, open-headed tree. This can be accomplished by first thinning out all crowding inside branches, and shortening in all others ftom one-half to three-fourths of the year's growth, doing the closest cutting in the central top.

The third year's pruning should be on the same general plan, having the same object in view, to establish a well-formed tree best suited to produce the greatest quantity of fruit in the highest perfection. Pruning must be kept up year after year, but as the trees grow older less severe cutting will be required. The aim should be to avoid long, bare branches that only bear fruit at the extremities, and, as a consequence, break down the trees.

No specific set rules can be given for pruning, but every one who would prune intelligently must study the characteristics of growth and fruitage of the trees upon which he would use hisknife.

Pruning may be done at any time during winter, but we prefer to have it done after the buds begin to swell in early spring. If done earlier it tends to hasten the development of the buds left, thus increasing the liability to injury from frost, and if buds have been injured before trimming you can then trim to retain as many live buds as possible.

THINNING.

This operation is necessary to success, but one that puts the nerve of the inexperienced grower to a severe test. This work can be partially accomplished by pruning as we have intimated, and some seasons the late frost will do the work even more thoroughly than we may desire.

It is not unusual in a good season for a four-year-old tree to set 800 to 1000 peaches, which, if left on the tree, would measure two bushels when ripe, and be worth perhaps fifty cents per bushel; but if all down to 300 were pulled off, these, when ripe, would also measure

two bushels, but be worth two dollars or more per bushel; and while the small peaches could only be shipped at a loss, the larger ones would yield a handsome profit.

A large per cent. of the edible part of a peach is composed of water; hence it is the formation of the seed that exhausts the vitality of the tree. The perfecting of the seeds of such an immense number of peaches will frequently exhaust the vitality of the tree, so that it cannot produce another crop for years, and this is one reason why peach trees allowed to overbear are usually short-lived. Peaches should always be thinned before the seed begins to harden, while you can still run a pin through them without meeting any obstruction from the seed. If any show marks of having been stung, or are in any way faulty, they should be taken off and destroyed.

We should leave the peaches as equally distributed as possible, from four to six inches apart, all over the tree. The cost of thinning should not be considered, as if they were left on they must be picked when ripe, and it certainly will cost less to take them off while small, to say nothing of the vastly increased value of those that are left to fully develop.

Remember that overbearing is the "besetting sin" of the peach tree, and that thinning *must* be done if you would grow the finest fruit. If we were asked to give the approximate number of peaches that should be allowed to mature on a tree, we would say, for a three-year-old tree, about 150; for a four-year old, 250; for a five-year-old, 400; but seldom over 600 for a tree of any age.

CULTIVATION.

It is just as reasonable to expect a good crop of corn without the same care. During the first two or three years some low hoed crop, such as peas or melons, may be grown in the orchard, but they should not be planted too near the trees, and the space around the young trees should not be neglected, but should be kept clear of weeds and grass and the surface mellow.

The cultivation of young orchards should be suspended about the 1st to 15th of August each year, in order that the young wood may mature before winter. Cultivation should be kept up in the orchard as long as it lives. It should commence in the spring, as soon as the blossoms open, when the orchard should be carefully plowed, being careful not to plow so deep as to injure the roots.

For subsequent cultivation, on lands not too rough or stony, the Acme or Cutaway harrow may be used, thus saving much time and expense. It will, however, usually be necessary to use a one-horse cultivator directly in the row and next to the trees.

We need scarcely caution the orchardist that great care should be exercised in the work of cultivating not to break the branches or in any way mutilate the trees. Cultivation should be kept up as often as necessary to maintain the surface in good condition until in August.

FERTILIZING.

Of the three essential constituents of plant food—nitrogen, phosphoric acid and potash—nitrogen is of the greatest value in promoting growth and forming wood. This fact indicates that manures or fertilizers rich in nitrogen should be used during the first years of growth in the young orchard.

Of this class of fertilizers, we might mention well-decomposed barnyard or stable manure and cottonseed-meal, which should be applied early in the season, to be turned under at the first spring plowing.

When planting no manure should ever be put in direct contact with the roots, but in some soils a few handfuls of fine bone may be mixed in the soil about the roots. When the peach tree comes into bearing, phosphoric acid and potash are necessary to the proper development of size, beauty and flavor of the peach. These elements can be supplied by fine ground bone and muriate of potash, or hardwood ashes. Many orchards become unprofitable because they are not properly fertilized. One great reason for the failure of so many orchards is because they are starved. After the trees come nto bearing, they have to perform the double function of developing wood growth and perfect-

ing the fruit, and the failure to perform either of these functions properly is evidence that the soil must be enriched or the orchard will no longer be profitable.

The rootlets that absorb the plant food necessary to the growth of the tree and the perfection of its fruit are found away from its base; hence the fertilizer should always be applied broadcast over the entire orchard.

The practice of piling up manure arouud the base of the tree is about as sensible as it would be to apply a poultice of bread and milk on a man's stomach to alleviate hunger.

A NEW PACKING MATERIAL FOR FRUITS.

AN interesting experiment has just taken place in the matter of packing fruits in the colony of Victoria for shipment to England, says the *Gardener's Chronicle*.

As is pretty generally known, apples and pears are now brought from the Cape of Good Hope and from Australian colonies in boxes holding a bushel, which are stored on board ship in cool chambers. These chambers, or refrigerators, have been provided by the steamship companies at a considerable outlay of money. The fruits are merely wrapped in tissue and placed in the boxes.

Under this system apples have for the most part come very successfully, but pears have been less satisfactory. Occasionally, there have been pears from the Antipodes that have reached this country in a sound condition, but numerous consignments have proved to be of little value, and the commission agent is never able to speak of such fruits or gauge their value until they have been unpacked. The freight per bushel from Victoria to London for apples or pears so packed and stored on board ship in cool chambers is 3s. 9d.

Such are the circumstances of the present system, and the amount of freight paid for passage.

And now for the experiment, for intelligence of which we are indebted to Mr. J. B. Thomas, a well-known fruit salesman in Covent Garden, to whom the fruits which have been the subjects of experiment where addressed.

Instead of packing the apples wrapped in tissue only, in the case of several bushels that have recently arrived in London by the ss. "Wakood," a quantity of asbestos, or a preparation of this substance, has been used. The fruits were wrapped in tissue as formerly, and afterwards embedded in the asbestos, each fruit being perfectly surrounded by this substance. Upon unpacking the case, the asbestos appeared to be caked, but it was easily broken up, and then appeared almost like flour. We should suppose, therefore, that the fruits would be airtight under such conditions, and this will account for the fact that as we saw them they were perfectly sound, and in excellent condition, although five months had elapsed since they were packed in the boxes. The apples were grown by Mr. J. R. Warren, Mount Alexander Orchard, Harcourt, and Mr. J. M. Ely, Rosehill Gardens, Harcourt, both large Victorian fruit growers. They were packed and brought to this country under the direction of Mr. George Pontin, Church House, Yapton, Sussex. The apples were gathered and packed previous to May 5 last year, but owing to some objection, we believe, on the part of the steamship companies, there was a delay of two months or more before shipment, and even then they travelled by the Cape route. The companies, naturally perhaps, object to the introduction of a new system of packing fruits that may render unnecessary the cool chambers that have cost so much money to provide. But such objections will, no doubt, be overcome, and if a syndicate be formed, as is now proposed, the system will be given a conclusive trial. The new system, should it answer to expectations, will possess several advantages. The fruit may then be stored in the "hold" of the ship, and the

freight per bushel case will be 6d. instead of 3s. 9d.; but as the packing material will displace a quantity of the fruits in each package, it may be well for the present purposes to describe the future freight of the fruit as 1s. per bushel. It must be remembered also that the asbestos is a valuable material in England, and it will be sold here to as much advantage as will the apples. The result will be that the asbestos and fruit would be brought to England for less money than is now paid for the fruits alone. The apples will travel as well or better, and it is thought they may be preserved after arrival here for weeks if necessary, providing that the cases be not opened in the meantime. And beyond the other considerations, it is hoped also that Victorian pears, by this system, may be placed on the English market without much risk of loss by decay.

FLOWERS OF THE TRANSVAAL.

NOW that the eyes of the world are turned towards the Transvaal, the following paragraph may not be uninteresting to our readers regarding its flora :

It is an old disproved libel on South Africa to say that her birds are without song and her flowers without smell. Neither statement is true. The flora and fauna of the Cape Colony, Natal, and the Transvaal are various and fascinating. Many of the birds sing, and many of the flowers have perfumes peculiarly their own.

The gigantic Cape disa and the glorious Table Mountain heaths, of hundreds of varieties, have certainly no heavy perfume, but, on the other hand, the thousands of quaint little peeping veldt flowers, from pimpernel to orchid, have subtle suggestive odours which are exquisite and refreshing.

In the Cape Colony for many miles between the Paarl and Cape Town the line is bordered with so-called "pig-lilies." These are none other than our carefully-tended and garden-produced arums. But in South Africa they grow wild and in luxurious profusion. Near Ceras there are great fields full of these snowy-white blooms with their orange-yellow pistils; and to see a couple of little nigger children playing about in this amplitude of whiteness is a delightful study in black and white.

Up in the Transvaal, if a farmer cultivates flowers at all—and all Boers are not as unapatve of beauty as their detractors suggest —he almost always has on his stoop, or ver andah, a couple of tubs containing plants of keitje perring. This is the gardenia of the commercial London buttonhole. It is smaller, certainly, but equally exquisite in scent, and with a little care it flowers in great profusion. The tuberose also flourishes amazingly in the open air with but the smallest attention and cultivation. At Johannesburg grows the easily-trained and useful grenadilla. This is a species of passion flower, with a pretty little feathery-starred flower and a very delicious egg-shaped, crinkled-up brownish green fruit, containing a yellow pulp with many flat black seeds. It has a cooling, slightly acid flavour, which must be tried to be appreciated. The grenadilla grows easily and quickly, and in flower, in fruit, and in foliage it is very beautiful.

THE KIEFFER as a dwarf is reported a failure by M. J. Graham in American Gardening. In 1895 he planted fifty first-class two year old dwarf Kieffers. Ninety per cent. were dead the end of the second season, and those which survived were found to have thrown out roots from Kieffer stock above the Quince. Other dwarf pear trees made good healthy growth. Certainly there is no use in planting Kieffer as a dwarf when it grows so rapidly as a standard and bears so early. At Maplehurst our Kieffer two years planted bore abundantly, one tree yielding two hundred pears!

WINTER ROSE TROUBLES.

OF ALL pests of the rose in the house or the greenhouse the red spider is certainly the most common and also one of the hardest to get rid of. The only practical cure or preventive for it is often overlooked by the young rosarian because of its simplicity; this cure is the "cold water" one. In commercial rose growing one of the essentials is a good water pressure for thoroughly spraying the foliage above and below on sunny days. In a conservatory it is, of course, an easy matter to apply the cold water cure with the hose or syringe, but with plants grown in the house they are difficulties enough. Rose plants cannot be effectively syringed in the window or on the plant stand; take them to the sink or bath and give the foliage as thorough a drenching as it would get in a driving rain storm. Do this every other day if the weather is bright; it must also be attended to on dull days during a continued spell of them.

The Scollay rubber sprinklers, of which several sizes are made, are a grand thing for sprinkling roses, in fact one is indispensable for the window garden. The red spider will be found on the under sides of the leaves, he often works away there, sapping the life and substance from the foliage till the plant becomes unhealthy looking and receives a check that it will not recover from all winter. The minuteness of this insect is well illustrated by this amusing incident told by the late Peter Henderson in *Practical Floriculture:* "Many years ago I had in my employment a young Irishman, who, by showing more than ordinary energy, quickly passed through the different grades, until he was duly installed as foreman. At that time we had been firing a Camellia house, and by neglect of keeping a properly moist atmosphere, the red spider had made sad inroads. John was duly instructed to syringe the plants night and morning to destroy it, which he did, no doubt, with a double object in view, as the sequel will show. John was on all occasions rather demonstrative, but one morning he came rushing towards me, his face radiant with triumph, with his hat off, but clasped in his hands in a careful manner, evidently having something of no common value within it. Before I had time to inquire the cause of his excitement he yelled out: 'I've got him! bedad! I've got him at last.' 'What have you got?' I enquired, expecting to see something in the way of a rat or mouse. 'Arra the big

devil himself, the big blaggard that has been doin' us all the mischief, the *Reed Sphider*,' and opening his hat a villainous Tarantula-looking fellow ran out, bigger than a thousand spiders, which was quickly despatched by John's brogan. From that time John learned to know what the red spider was, but was never anxious to allude to it afterwards." Get to know this insect, if he has not introduced himself already; he is passionately fond of many other plants besides roses, and may do you a lot of damage some day unless you know how to checkmate him.

FIG. 1741. TEA ROSE IN A STATE OF REST: PRUNED AND REPOTTED FOR SPRING FLOWERING.

Mildew, as it attacks roses, appears like a fine white powder at the first; it is a fungous growth and unless checked will do irreparable damage; vigorous, healthy growth will do as much towards warding off this trouble, as it will insect pests, but there are times in dull winter weather or during a damp cloudy spell when mildew will make its appearance, even in places where roses are grown as a specialty. In greenhouses it can at most times be prevented by applying sulphur to the heating pipes, mix it with water to the consistency of paste and apply with a brush when the pipes are hot; rather apply it often and in small quantities, too much will injure the young growth. Several of the insecticides offered contain some form of sulphur and will keep the plants free from mildew. It is our preference to use a remedy for each enemy, knowing just what it is applied for, rather than to use a doubtful "cure for all;" 2 ozs. of Sulphuret of Potassium dissolved in 4 ozs. of water and used as a spray is useful when the fire is not going. The green aphis, or plant louse, as it is sometimes termed, is the third principal enemy of him who would grow roses during winter. Fumigating the conservatory by burning some moistened tobacco stems is the usual remedy, the smoke will temporarily deprive the flowers of their perfume though. The use of a tobacco extract, such as *Nicko-teen*, will not effect the perfume. These extracts are diluted with water and after the solution is put into a metal vessel a hot iron is dropped in to evaporate it. For the window that possesses but three or four rose plants the following is simple and effectual: Cover each plant with a paper cone and give the smoking member of the family a cigar, of course he will consider it no hardship to blow a few whiffs into each cone; this will quickly rid the plants of green fly.

There are ways of preventing those rose troubles without insecticides—not that rose pests can possibly be entirely prevented without them, but the fact is that if you start with vigorous, healthy, plump-wooded plants and maintain proper temperature and atmospheric moisture your troubles will be minimized. As a man, full of vitality and strength, will escape many of the thousand natural shocks that flesh is heir to, so healthy

plants will in a great measure escape their enemies. Do not make the mistake of choosing indifferent rose plants for the purpose of winter flowering, intending by good culture to restore them to full vigor. Remember that in forcing a rose for winter flowers you are overcoming their natural inclination to rest in winter, and, consequently, drawing heavily on the life and energy of the plant.

Roses planted in the greenhouse in September or October (and there are many planted then) miss the season for putting on the kind of growth that makes good winter flowers a possibility. June and July are the proper months.

This year, at the proper season, we hope to give Horticulturist readers a few helpful reminders about early planting of forcing roses.

WEBSTER BROS.

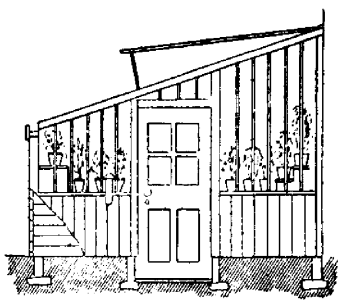
Hamilton.

CONSERVATORIES IN OUR HOMES AT SMALL COST.

AT our Whitby meeting Dr. Harrison, of Keene, gave an inspiring address on the above subject, which we publish now in advance of our report because the topic is a seasonable one.

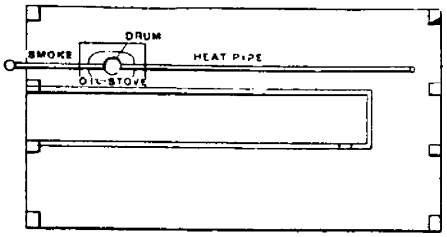
DR. HARRISON: "I am to talk a little with regard to flowers. In our young country—because we are still in the condition of youthhood as a nation, beginning to feel that we have manhood coming to our shoulders, and that we must soon in God's providence take our place in the rank and march of nations—(hear, hear)—in our younger days we were satisfied with the flowers that were in the windows, and we took much pleasure and so much joy out of them. Why, you as well as I, sir, have been in many a home and seen with what joy and pride the lady of the house looked at that spindly thing in the kitchen window. It was the dead of winter, but it had a few sickly green leaves on, and it was a joy to her heart. But as we have advanced in our social surroundings and in our better equipment all the way round, the demand is that that æsthetic sense—which is one of the senses that has not been taken cognizance of as it should have been—demand a better quality of flower and a larger variety. Look at this exhibit and think of the fruit we had when we were boys. I had the pleasure of going to a school, walking a mile and a half, and it was a joy to our hearts when December came that we could go over to a crabapple tree with apples about that size (showing) that would draw your mouth up. Were any of you in Toronto during the last chrysanthemum show at the Pavilion? Look at those massive things. You could have those in your homes. Look at those ten inches in diameter. Look at those orchids which stood up on that dais; you can have these things. Look at those carnations which were so charming, and those roses which Dunlop had there; we can have those too, and not at great expense. How? That is the first question. There are two ways within the reach of every person of average means. In the first place, in constructing our verandahs, construct them with the idea that they are in touch with our principal living room, whether that is your library or dining room, or whether it is a sort of half withdrawing room. A wide verandah, a verandah you can get a large amount of side light, then you can have a bench along the side of that, and you would be surprised—I have tried it for myself—what a quantity and what a richness and what a fulness of bloom is possible. Now, you know that in so many of our homes now, instead of the old wood stove or the old base burner coal

stove, we have our furnaces in the cellar. You say, 'Well, what are you going to do with hot air?' You can do something with hot air, but not so much as with hot water; and there is no furnace, whether for wood or coal, in which you cannot put a little coil and carry that into the small conservatory and give it a generous, even heat which will give you beautiful flowers. You try to grow a certain class of flowers or roses, say carnations or violets, in an ordinary room, you can't do it satisfactorily. Your roses will be overcome and devastated with the aphis, and your carnations will fail to open up in their beauty, and the violets will religiously refuse to bloom satisfactorily and give their fragrance. Why? Because the temperature in the ordinary room is up and down, up and down, and that is inimical to plant prosperity. They don't like any better than we do the see-saw of life, and they don't prosper on it any better than we do. It is irritating and they resent it at once. Another form of conservatory, which is more desirable and cheap—remember, I am not talking about one that is the most desirable and expensive, nor one that with its span and with its arched glass roof is one of the luxuries which are only available to the rich —but I am speaking of that which is avail-



able to those of smaller means; that is, to build on the side of the house a lean-to conservatory; and I have one in my mind's eye now, 12 feet long, 8¾ feet wide, with 100 plants that are doing sterling duty the whole year round and supplying the house with a profusion of bouquets. That is a small house, but you can have it anywhere 10, 12, 14 feet wide, and whatever length you want; but by giving a top glass to it you have plants which grow straight up. It is just the ideal thing for your carnations. They open up beautifully without that crack on the side which is so apt to be with side light where they turn their faces. Having the top light you bring your plants nearly to the glass so as not to meet so much of the refractive rays, causing your plants to be healthier and sturdier in growth, and the flowers themselves to be richer in tint and sweeter in odor. Carry out the same idea again in regard to heating. If you don't put in a heater by itself, carry from your house furnace a coil and you can run your hot water underneath your plant shelves, or you can run it above it, or run each pipe along the glass. The advantage they claim for the latter place is that the air that comes chilled from the glass becomes heated before it falls on the flowers. Either take in a verandah and make a conservatory of it or build a lean-to and make a conservatory of it. You can take the latter and make $100 build your concern, put in your heating apparatus if you have not already a furnace in your cellar, and stock it with a fair variety of plants, which you could not grow in your living rooms to advantage. Last year I saw a little conservatory of that sort 9.6 ft. wide, 24 feet long, with 500 plants, with bouquets of roses and carnations, geraniums, fuschias and a large number of the other plants, supplying not only the household but a church on Sabbath day with bouquets, and furnishing flowers for nearly all the sick families within the radius of some three or four miles, and I am positive that that did not cost $80 in its whole outfit. It was built and heated by itself, which is the better way, because then you can regulate it. One of the old "Giant" stoves was taken, and in the top of it there were five coils of inch pipe, and then

that pipe was carried with ten coils under the bench, six coils on the back wall, and the whole of that plumbing was as follows: The cost of the stove was $6; the mason was paid $3.50 for bricking it in—the mason found the brick; and the plumbing cost $22; the owner being a handy man built the walls himself, bought the material at the sash factory and had a carpenter two days to get the thing closed; and with that small cost he



had all that beauty for himself and others. Don't attempt to put everything you can read of in the books into your conservatory; nor to put all that you read of in books into practice. Go slow. Feel your way. We are always safe in starting with geraniums. The geranium is one of God's greatest blessings in the flower line to humanity, because it will stand almost any treatment and show a smiling face. There are some plants that are just as pernickety as pernickety can be, but you must understand their pernicketiness or you won't get the pleasure from them. You who love horses don't want a horse that goes like a tame sheep, but you want one that makes you feel the ribbons, and that is a thing of life, and you control it. That horse steps out and you feel that you can pass John A. Thompson as you go down the street. Flowers need to be handled in the same way. It is said that roses would be as sweet under any other name. I don't know; I never saw roses under any other name, but you know they are sweet and desirable. The plant that would be more amenable next to the geranium probably is the carnation; but those of you who are lovers of flowers know that what we called carnations when we were boys would not pass as flowers to-day. Look at those carnations, great beauties splashed white and rose, yellow, mauve, almost all the shades of color, and so sweet and so fragrant, and they can be grown in a little conservatory, so that a couple of dozen roots will give you carnations galore. Then next to that, in a small conservatory it is desirable to have that which is ornamental. Then you come to the palms. Keep to the Kentias, they will give satisfaction. There are certain plants which have somewhat been neglected in the greater majority of families, and this is the begonia family—beautiful plants that require little attention and little study, and which are most desirable and full of beauty. They would be almost sufficient for any amateur to start with and would give him satisfaction. Where there are apples and music there should be flowers. You know there are birds in so many homes, and what a dirty thing that sweet little canary is, and how often you have to take the dust-pan to gather up those broken seeds; but you could have fish—a small aquarium fitted with some of those Mediterranean carp known as gold fish, or even some of our own minnows or shiners or red roach or the beautiful sunfish. A few of those in an aquarium, with a certain amount of plant life, so as to balance your animal life with your botanical life; the water should not require changing any oftener than two or three months, and you may feed them a little German feed once a day, and you have got a thing of beauty and a joy forever. Their sinuous and graceful movements are a charm, and you can sit and watch them with pleasure, and they are ever so much more cleanly to look after than Dicky is."

WATERING HOUSE PLANTS.

I AM satisfied that not one person in twenty is aware that too much water is more dangerous to the plants than too little. Some gardeners seem to have the idea that to take a watering pot in hand to supply the needs of plants is an easy duty, and that to give a dash here and to soak the soil there is all there is to the matter. One thing is to be observed: All plants under all circumstances, nor, indeed, the same plants under different circumstances require the same amount of water. It is necessary, therefore to study the nature and habits of kinds so that each may be treated according to its needs. A vigorous blooming plant, say a fuchsia or geranium, might be said to represent the maximum need of water; the same when in a state of rest, in cool, damp weather, the minimum requirement as to this. Therefore to give exactly the same quantity of water in both conditions named, would be to cause harm by not giving enough water to some and too much to others. One safe rule is to wait until the ball of earth begins to get rather dry, and then to give enough water to moisten the soil through and through. Then do not water again until the former state of dryness is reached, be that time six hours or six days.—*Vick's Magazine.*

LOBELIA CARDINALIS.

THE LOBELIA CARDINALIS, or Cardinal Flower, is the most showy of our native plants. Its rich, cardinal-red shade is extremely rare in flowers; in fact, we can recall no other wild flower of the same gorgeous hue. Though growing naturally in rather wet spots, it takes kindly to cultivation and will grow and blossom very satisfactorily in almost any location, particularly if it is where a dash of water can be given it once in a while. It begins to blossom in July, and the long spikes of brilliant flowers will continue opening to the very tip, lasting until the latter part of August.

Numerous side shoots spring out from the main stalk and lengthen the time of flowering, and these little sprays mixed with some fern fronds are lovely for table decoration.

The plant can be raised successfully from seed, but will not bloom until the second year. With us, while not common, it is sufficiently plenty that roots can always be obtained if you know where to go for them. I have found that after the seeds have ripened the flower stalk withers and in the fall a new growth starts, forming a little green rosette of leaves, and this is the best time for transplanting.

This summer I found a plant with pure pink blossoms growing in the midst of hundreds of the typical colored flowers I thought it a rare find, as I had never seen or heard of any such before. Later I found that one of the same color was growing in a bed of seedlings at Highland Park.—*Vick's Magazine.*

THE SAN JOSE SCALE IN GEORGIA.—A press dispatch from Atlanta, dated Dec. 30th, says: Thirty thousand fruit trees, comprising the entire orchards of D. C. and G. W. Bacon, in Mitchell County, will be burned by order of State Entomologist Scott, owing to the ravages of San Jose Scale.

In the immediate neighborhood of Dewitt, in the counties of Inerwein, Berrien, Worth and Mitchell, are more than 300,000 bearing peach trees, and in justice to the owners of neighboring orchards, as well as to perform a service for the state, the trees will be destroyed. The work will require several week's time.

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.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE YORK IMPERIAL is highly commended by H. E Van Deman as a commercial apple. He advises Ben Davis as most profitable for Colorado, and York Imperial as second.

A GLORIA MUNDI APPLE was recently shown at the Indiana State Fair in 1899, weighing 23¼ ounces, and measuring 16 inches in circumference. This is claimed to be the largest apple in the world.

GOOSEBERRY MILDEW is very resistent to fungicides, and so far satisfactory results from treatment have not been obtained. Close, of Geneva, has been trying Bordeaux, lysol, formalin and potassium sulphide, and in each case the latter substance has given the best results. The Bordeaux mixture seemed comparatively valueless, though very early applications gave some favorable results.

CRUDE PETROLEUM has been tried with considerable success in the state of Pennsylvania as a remedy for the San Jose Scale. If this substance is effective, it is much cheaper than whale oil soap, and might perhaps be purchased in large lots for fruit growers' use in spraying their orchards, at wholesale rates. At the Petrolia mills crude oil has been quoted as low as $1.65 per barrel.

John B. Smith, of the New Jersey experiment station, has also given two season's trial to this substance and gives the result in Bulletin 138. He says that a thorough application of this crude petroleum to dormant trees completely destroys the Scale without perceptible injury to the trees themselves. He has tried it on all varieties of orchard fruits except cherries, and upon some bush fruits, such as currants, gooseberry and raspberry bushes, with good results in killing the Scale, while the greasy brown coating of the bark which results and

remains for several months, pretty effectually repels fresh infection. If our infested orchards can be so effectually treated as Prof. Smith seems to have demonstrated, it is evidently useless any longer to continue the wholesale destruction of valuable orchards which are only slightly affected with this pest.

EXPORT OF RASPBERRY PULP.—Some of our readers are anxiously asking to know the results of our export shipments of raspberry pulp. The following enclosure from Mr. Harrison, Watson, is written by a firm which had been testing Raspberry for use in making essences, is not encouraging :

As to the Fruit Pulp, I am sorry to say that our experiences with it has been a failure. In making fruit essences, we find it necessary to develop a small amount of fermentation under carefully guarded conditions, and this properly done, the flavor and aroma of such fruit as raspberries is fully double.

The raspberry pulp, as prepared by you, is not susceptible to this change. In the letters of one of our correspondents, it is mentioned that the fruit was slightly evaporated before being sterilized in the tin cases. If this be so, it may be sufficient to account for its uselessness to us.

It may be that the natural ferment present in tresh fruit is destroyed in sterilizing, but I do not think this is the case, as the fermentive germs are sufficiently present in the atmosphere to excite change under proper conditions.

We will, however, make some experiments to determine this point when we buy our next year's supply of fruit but at present the want of flavor, aroma and color, in the canned raspberries makes them useless for our purpose.

KEEPING APPLES.—The winter 1899-1900 will long be remembered among fruit men for the early decay of apples stored for winter sale. Something in the season has caused a lack of that firmness and keeping quality usual with our best winter varieties. External conditions, however, count much more in the keeping of of fruit than is usually supposed ; cold and moderately moist air being most favorable. Gregory, the noted Seedsman, relates his experience as follows :

I noted that two of your correspondents, in their advice as to the best way for keeping apples, advised that the cellar should be a dry one. Here in eastern Massachusetts we don't think that way, but would prefer a damp, cool cellar, especially with the russet varieties, which are inclined to shrivel in a dry cellar. About 50 years ago, when a young college graduate, I was teaching a country academy in Massachusetts. At apple-picking time, one of my schoolboys brought me a Roxbury Russet from his father's cellar, in sound condition, that had been picked the previous year. The next day he brought me another that had been picked two years before. This also was sound, but it looked and tasted much as a cellar smells. I investigated, and learned that the apples had been kept in the house cellar, in barrels and bags thrown in on them, and that the cellar differed from ordinary cellars in being quite damp, which would be inferred from the fact that a stream of water flowed parallel with one end of the house and within six feet of it.

PACKING INFERIOR APPLES.—It is only fair to our many fruit growers throughout the Province to defend them from the blame manifestly laid upon them for shipping fraudulent packages of fruit. This filling barrels with cider apples and facing with No. 1 apples is not done by our fruit growers, but by speculators who buy orchards and ship, often under an assumed name, everything in the orchard. Here is one example, taken from the last November crop report :

Kincardine, Bruce: A great many of the farmers sold their orchards by lump and lost heavily by doing so. One man sold his for $75, and they packed or filled about 300 barrels. Another sold his for $25, and there were over 200 barrels, and so on. The packers had to pull the apples, and the consequence was that many inferior apples were packed, so that I fear it will hurt our market in the Old Land for another year. There ought to be something done to prevent them from sending inferior apples to the Old Country.

We hope the provisions asked for by our association will prove effectual in barring the continuance of this evil.

THE FORTY-FIFTH ANNIVERSARY of the Western New York Horticulturist Society was announced for Jan. 24th and 25th, 1900. Our President is the delegate from our Society, and we hope he may bring us back much valuable information. Among the subjects we note Fertilizers for Orchards, by Prof. S. P. Mayyard, of Massachussetts ; the Small Fruit Package Law, by M. D. Barnes ; Soiling Crops as related, and Fruit Culture, by Prof. H. E. Van Dewsen ; Comfort and Plenty, by Prof. J. P. Roberts, Cornell University, etc., etc.

Our Affiliated Societies.

GRIMSBY.—At our annual meeting, after the election of officers, it was decided to hold monthly meetings, beginning the first Saturday evening in February, from 7.30 to 9.30. The committee will either secure a lecture, a paper from some member as the principal feature of the evening, to be followed by questions and discussion, or will provide a topic, as for example the Dahlia or the Palm, and ask each member to bring a reading on the topic, not to exceed three minutes, except perhaps in the case of the opening reading. The evening will, of course, be brightened by musical contributions. In this way much valuable information will be gained by every member in the course of a few years, and the effect must become noticeable in the flower gardens of the community.

PORT HOPE.—The annual meeting of the Horticultural Society was held in the council chamber on Wednesday, Jan. 10th, to receive the Secretary and Treasurer's report and elect directors for the year 1900. The Treasurer's report for 1899 was read showing an expenditure of $2.15, from which each member received a monthly magazine, bulbs, plants, etc., leaving a balance of sixty dollars for the current year.

H. H. Burnham was elected president and A. W. Pringle, secretary-treasurer.

WOODSTOCK.—The exhibit held recently by our Horticultural Society may be considered a fairly successful one, both in a financial way and in the larger attendance of the public generally. Although this be so our members must not rest content, considering that the acme of perfection has been arrived at, nor must they be misled by the kind words of approval with which their efforts were received. In making some comments on the Show the writer hopes that her remarks will not be taken as unkind criticism, but in the belief that the consideration of any points which may be raised will lead to discussion which shall ultimately result in benefit to our members. The arrangements were, on the whole, satisfactory, and showed the plants to good advantage, but, regarding the plants themselves, few of them, from a florist's standpoint at least, could be considered specimen or exhibition plants. Among those which might be mentioned as coming nearest to this standard may be named a Latania Borbonica Palm, a Phœnix Reclinata Palm, a flowering Begonia, a Musa Ensete and a Strepsophelon Jamesoni, and of these possibly the first named palm was the best, being of a fair size and having perfect leaves. The majority of the plants exhibited were of such a character as looked well when massed, but individually would not look so well. The question then arises, can these plants be properly grown without the aid of glass? The answer would be that to a certain extent they can, but to be really successful with a large number the aid of glass is requisite. However, may it not also be asked do not amateurs endeavor to grow too many plants and thus, by overcrowding, render it quite impossible to succeed as might be done by having fewer and consequently better grown plants? In certain classes of plants—the Geranium for instance—there seems to be a tendency to grow a very limited number of varieties, principally of the Bruant and Souvenir de Mirande type, the former of which, from their thicker leaves and semi-double flowers, stand the sun and rain better than the single and more double varieties. It seems a pity that this should be so for among some of the newer doubles and round-flowered English varieties, many of which carry flowers of over two inches in diameter and in large trusses, are to be found some which would be a perfect revelation of beauty to those who have not already seen them, and which make charming pot plants. Another matter to which our attention might with advantage be directed is that at our Shows, by the members at any rate, plants should have labels showing the name of the species to which they belong, and if the species be sub-divided into varieties, the name of the variety should be shown. Take for instance such a well-know plant as the Fuchsia, a visitor might be struck with the beauty of some particularly pretty variety and have a desire to possess a similar one. In this case if the name, Mrs. Marshall, Mrs. E. G. Hill, Phenomenal or whatever name by which the piant be known in commerce, be attached to it, the desire would be easily gratified.

Passing on to the cut flowers may we not ask why, in so large a Society as ours, together with contributions from others not members, as well, was the display so small and confined to so few classes? In order to bring out the facts as clearly as possible, let me as briefly as possible enumerate, as far as recollection will serve, the flowers shown: Gladioli, 2 exhibits; Asters, 2 or 3; Cannas, 1; Phlox Drummondi, 1; Sweet Peas, 1; Stocks, 1; a small collection of roses and two or three bouquets. Some of these, however, were very nice and nicely shown, notably the Phloxes which were shown in separate colors, this being a very desirable feature where it is at all practicable, because some shades of color in themselves beautiful do not harmonize well when shown together. The same to a certain extent might be said of the fruit, that is, that while good there was too little of it to make a proper showing. Might it not be suggested that our members, as far as possible, take up some special class or variety of plant, as has been done to each, and by devoting their attention more in the one channel secure greater perfection.

It is on these lines that the noted specialists in Europe (and may I mention our own Mr. Groff in Gladioli), have made world-wide reputations for themselves, and while we cannot hope even to emulate them yet there is more satisfaction in attempting little and doing that little well than by attempting too much, and by so doing fail even in pleasing ourselves. These remarks should not be brought to a close without referring to the regret

we must all feel in the small support we receive from our professional friends whom we would naturally expect be the leaders in these matters, the more particularly so from the fact that while there may be some trouble and no money in it, yet these exhibitions must tend much to foster a love for flowers which should ultimately be to their benefit and add greatly to our pleasure

W., before Woodstock Society.

HAMILTON.—There was a fair attendance of members at the third annual meeting of the Hamilton Horticultural Society last evening in the Hamilton Association's room. President A. Alexander occupied the chair. J. M. Dickson, secretary, presented a satisfactory report of the society's work for the year. There were held ten general meetings and ten director's meetings. Six papers were read and several addresses delivered on horticultural topics. Two exhibitions were held, in June and November. At the first the expenses were $115.76, and the receipts $21.05, a loss of $94.71; at the second the expenditures were $84.55, and the receipts $36.45, a total loss of $142.81. Two distributions of premiums were made, one by the Ontario Fruit Grower's Association and the other by the Society.

The finances of the year were: Receipts, $670.53; expenditures, $528.60; balance in hand, $141.93. There were 148 paid-up members on the books.

On motion of President Alexander, seconded by Frederick H. Lamb, the report was adopted.

The election of officers resulted in the election of A. Alexander, president, and J. M. Dickson, secretary.

The question of the composition of the board of parks commissioners was brought up by the president. Mr. Alexander said the Society had, at least, an interest in the selection of the board. The commissioners would have absolute power and the greatest care should be taken in their choice. They should be free from political bias and mercenary aims, and should have a natural taste for the beautiful and leisure to devote to the work of the board. He thought the society ought to recommend one or two names of men it thought qualified to act as commissioners. He could see there would be great difficulty in the aldermen agreeing on the six required from the large number nominated by the mayor.

Mr. Cauley was of opinion that the Society should assist in picking out the most competent men for the positions. He suggested Mr. Alexander and Mr. Kilvington.

Frederick H. Lamb thought it would be injudicious to name anyone.

F. B. Greening favored going through the list of nominations and suggesting six as the society's choice.

Robert Wilson was of the opinion it would be injudicious to mention names. A resolution asking that care be taken in the selection was all that ought to be sent to those who would make the choice.

Mr. Greening said he could not see how the council could take umbrage at the society making suggestions any more than against the Improvement society for its suggestions.

Finally, on motion of S. Aylett, seconded by F. B. Greening, it was resolved that a deputation from the society place twelve names of worthy men before Mayor Teetzel, with the suggestion that from them be chosen the required six. The officers and directors were appointed to make the selection of the twelve.

At the close of the business meeting the officers and directors met, and after unanimously re-electing J. M. Dickson secretary-treasurer, proceeded to pick the selection from the mayor's battalion of nominations. They proved to be these:

A. Alexander.
Frederick H. Lamb.
B. E. Charlton.
John Knox.
F. W. Fearman.
John A. Bruce.
J. G. Bowes.
J. J. Evel.
H. P. Coburn.
C. D. Dexter.
George Rutherford.
J. G. Y. Burkholder.

Rev. A. McLaren, J. Kneeshaw and Secretary Dickson were appointed the deputation to lay before the mayor the names selected on behalf of the society.

LONDON.—The inaugural meeting of the London Horticultural Society took place last night in the lecture room of the Y. M. C. A. The meeting was well attended and the proceedings were throughout of the most enthusiastic and harmonious nature. The new society enters upon its career under the most favorable circumstances, having already secured over 100 members.

The meeting opened about 8 o'clock with Mr. J. A. Balkwill in the chair, and Mr. W. E. Saunders acting as secretary. The first business was the election of officers, but before it was proceeded with Rev. Dr. Bethune was asked to favor the meeting with some facts as to the formation and advantages of horticultural societies, he having been a member of the horticultural society at Port Hope during his residence there. Dr. Bethune responded and threw considerable light on the subject. A number of new members were enrolled, and the election of officers was then proceeded with, resulting in the election of J. A. Balkwill, president, and R. W. Rennie, secretary.

The adoption of by-laws was then proceeded with, this order of business being greatly expediated by the fact that the act under which the society is formed provides certain by-laws that must be adopted. Considerable discussion was evoked by the fact that there already existed the District of London Horticultural and Agricultural Society, and it was feared that confusion would arise in the names The president explained that the name of the society had been fixed by the government and that the other society would amend its name so as to avoid confusion. The object of the society, as set forth in the by-laws, is the encouragement of horticulture. Four public meetings must be held every year, at which flowers, plants, fruits, etc., may be exhibited by members and the public. Members of the Society are entitled to membership in the Fruit Grower's

Association of Ontario, and to participate in its advantages. The surplus profits of the society are applied to the procuring of bulbs, seeds, plants, etc., which are distributed free to members.

The first meeting of the directors will be called shortly by postcard, and they will decide on the dates for the four regular meetings of the year. Special meetings will also be held from time to time for the hearing of lectures from government lecturers and horticultural experts.—*London Advertiser.*

TORONTO JUNCTION.—The Toronto Junction Horticultural Society is the name of a new organization that promises to be of great usefulness.

The organization meeting was held in the council chamber of the Town Hall on Wednesday evening with a fair attendance.

Mr. A. Gilchrist, who had been authorized by the Deputy Minister of Agriculture to organize the society, called the meeting to order and presided until the work of organization was completed.

At the election of officers Mr. A. Gilchrist was elected hon. president and Mr. F. C. Colbeck, president.

In accepting office, President Colbeck expressed his thanks for the honor conferred upon him and referred to the importance of the work in which the society was to engage and promised to use his best endeavors to make the organization a useful one.

Mr. Gilchrist, after expressing his thanks for the society's mark of appreciation in electing him honorary president, referred to the very useful work the society could do in a young town like the Junction. He had thought of taking steps towards organizing it several years ago, but had been deterred by the then shifting character of the population. Now that there was a more permanent population he thought a great work could be done by such an organization, and he mentioned some of the ways in which it could make its usefulness felt, such as protesting against the destruction of beautiful trees or the burning of underbrush. The good roads movement was something that should have the co-operation of the society. An effort should be made to interest the children in the beauties of nature and he advocated giving prizes to encourage them in horticultural pursuits.

A resolution was adopted in favor of affiliating with the Ontario Fruit Growers' Asssociation.

Regular meetings of the society will be held on the fourth Tuesday of each month, and if the consent of the council be obtained the meetings will be held in the Council Chamber.

WOODSTOCK.—Mr. Scarff, our director for that district, sends us the following clipping from the *Times* of Jan 11th:

Last night the annual meeting of the Woodstock Horticultural Society was held in the council chamber, with a good attendance of members. Interest seems to be growing rapidly in the work of the society, and the reports presented by the president and secretary last night were very gratifying indeed. The year just ended has been the most successful in the history of the local society, and they will begin the new year with increased energy, and an endeavor will be made to interest more in horticulture.

The annual report of the president, Mr. D. W. Karn, was listened to with a great deal of interest. In it he referred with pleasure to the very satisfactory condition of the society at the present time, and said that a great deal of credit was due the secretary-treasurer, Mayor Jas S. Scarff, for the success of the same. Mr. Karn also suggested to the incoming officials that a more determined effort be made to increase the interest in the monthly meetings, and at least every three months the meeting be so organized that they could have the attendance of the ladies in connection with the work. In retiring from the position of president, Mr. Karn thanked all the members for their confidence, and complimented the society for the unprecedented report of the secretary-treasurer. Upon motion the report was carried unanimously.

The secretary-treasurer, Mayor Jas. S. Scarff, also presented his annual report. It was very grattfying to the members of the society to learn that they were in such good standing. The society was in a better financial condition for the beginning of the new year than ever before. The report read as follows,—

RECEIPTS.

Balance on hand from last year	$ 70 71
Legislative grant	57 00
Members' subscriptions	99 00
Admission fees to exhibition	88 25
Commission from Ontario Fruit Growers' Association	19 40
	$334, 36

EXPENDITURES.

Rent light of buildings and grounds, etc.	$ 14 00
Meetings, lectures, etc	2 00
Periodicals	99 00
Purchase of seeds and plants	49 00
Working expenses	29 35
Printing	17 50
	$211 35

Balance on hand, $123.01.

Messrs. D. W. Karn and G. R. Pattulo were elected to the offices of president and first vice-president, respectively, with Mr. J. S. Scarff, secretary-treasurer.

LINDSAY.—The annual meeting of the Lindsay Horticultural Society was held in the council chamber last evening, for the election of president, first vice-president, second vice-president and nine directors, receiving the annual report, etc., was well attended. The report showed an expenditure of $182.15; balance in bank last year, $103.57; income for the year, $196; leaving a balance of $117.42 to the society's credit. The president for the year 1900 is Mr. W. M. Robson. Last year this society distributed to its members $76 worth of horticultural periodicals and about $90 in trees and plants. This only shows some of the work of this society, which ought to recommend it to the people for their most generous support. F. J. Frampton, sec.-treas.

MITCHELL.—As the result of a visit to this town by our organizer, Mr. Thos. Beall, of Lindsay, during the fall, a meeting was held in the town hall on the 10th inst. for the organization of a horticultural society. A society was duly formed with a membership of fifty-seven to start with. Following are the names of the officers elected:

A. D. Smith, M.D., president; W. Elliot, B.A., first vice-president; Mrs. W. Thomson, second vice-president, and T. H. Race, secretary-treasurer. The society is arranging for a public lecture sometime early in February.

LEAMINGTON.—The Horticultural Society's annual meeting took the form this year of a concert in the town hall last night. The president, Mr. Fraser, ably presided and before eight o'clock, the hour set, the large opera house was crowded to the doors by the most intelligent of our town's people.

Music was a leading featnre of the entertainment and local talent was reinforced by Miss Huff, of Dresden, who kindly assisted. She has a very sweet and powerful soprano voice. She sang "Life's Dream is O'er," in duet with Miss Nuller, taking soprano; Miss Fuller alto. She sang also two fine selections, and another in response to a hearty encore.

Our local prima donnas, Mrs. Manning and Miss Fuller sang beautifully. Mrs. Manning gave the appropriate piece, "Beautiful Flowers," and Miss Fuller rendered in her usual happy manner "The Highland Brigade." Mr. Edelsten, to whose push and enthusiasm the success of the function is largely due, sang with spirit the patriotic song, "Our Flag." Rev. Mr. Keith gave a fine reading. The orchestra, led by Mr. Maxon, ably accompanied by Mrs. Deming, Mr. Thorn and Mr. Ivan Russell, was of great assistance.

Miss Hanna Fuller and Miss Grece Smith also ably assisted in the accompaniments.

There were speeches more or less racy and relevant from Mayor Hughes, Messrs. Fuller, Johnson Hillborn McSween, Dr. Eede, Mr. Straubel, Mr. McKay and Mr. Lewis Wigle.

During the meeting over fifty members were enrolled, and at an after meeting the officers for 1900 were chosen: Hon. Pres., Dr. Hughes, mayor of Leamington; J. D. Fraser, pres.; J. L. Hillborn, 1st vice-pres.; E. E. Adams, 2nd vice-pres.; E. J. M. Edelsten, secretary.

Besides these there were nine directors and two auditors elected.

Our Book Table.

IRRIGATION AND DRAINAGE.—F. H. King, Professor of Agricultural Physics in the University of Wisconsin. 500 pp. Published by the Macmillan Co., New York. Price, $1.50.

We have many books on fertilizing the soil, and a few books on applying water to the soil artificially, but these latter treat the subject from an engineering standpoint rather than the agricultural point of view. It is therefore opportune that a book of this character should be given the public by a writer who has made soil physics a life study. As the author pointedly states: "Most works on irrigation have been written from the legal or sociological standpoint or from that of the engineer rather than from the cultural phases of the subject. The effort is made here to present in a broad yet specific way the fundamental principles which underlie the methods of culture by irrigation and drainage. The aim has been to deal with those relations of water to soils and to plants which must be grasped in order to permit a rational practice of applying, removing or conserving soil moisture in crop production." The author opens with a discussion of the principles underlying the watering of land, which is irrigation, and the withdrawal of water from the land, which is drainage. These are two opposite methods of land culture, both essential, but of special utility, depending upon locality and rainfall. One of the valuable things strongly emphasized in this book is the necessity of securing a desirable physical condition of the soil in order to obtain the largest return from the land. The author has shown that good culture, which means good physical condition, may in large measure replace commercial fertilizers. In other words a good physical condition of the soil is often mistaken for a "worn out" condition. The plant can only get hold of the plant food when the soil is in such condition as to hold a certain amount of moisture, air and humus. When these three agents are present the processes which attend the liberation of plant food are allowed to progress normally. He makes clear the fact that many so-called worn out soils are in reality poorly tilled soils. If no other point than this was brought out the book would have accomplished a worthy mission. In this way it is of special value to the eastern farmer. To the western farmer it is useful from the irrigation standpoint. It is well known that among the most productive lands on the continent are those lying in the arid or semi-arid regions of the west. The questions of how to conduct the water to the desired place and how to distribute it are of great importance. Bound up with these are those of economy as related to water supply and as bearing upon cost of application of water. The book, then, is divided into two parts: first, irrigation; second, drainage. In this way the principles enunciated have a wide range of application. It fills a distinct place among farm books and will undoubtedly be used freely in the college as well as the private library.

This volume makes an important addition to the Rural Science Series being edited by Professor Bailey. It is illustrated with a large number of half tone pictures and a smaller number of line drawings. While the mechanical make up is not quite equal to the preceding numbers of the series, it bears the unmistakable stamp of the Macmillans, which is usually a synonym of good book making.

J. C.

QUESTION DRAWER.

Arrangement of Home Grounds.

SIR,—I have been much interested in the articles on landscape gardening which appeared in the "Horticulturist." I intend laying out my own grounds and thought of sending you a plan of ground for any suggestions you might offer.

A gravel ridge runs across the field and down into the bush. It is about four or five rods wide and higher than the land on either side. The barn is built against it and I have marked a site for a house on it.

The gate or driveway cannot be put any further west than is marked without having a hill to climb. The house being so far from the road I don't know what to put in front of it; a lawn so long would be too big. I would like you to suggest 1st. A driveway in from the road and position and

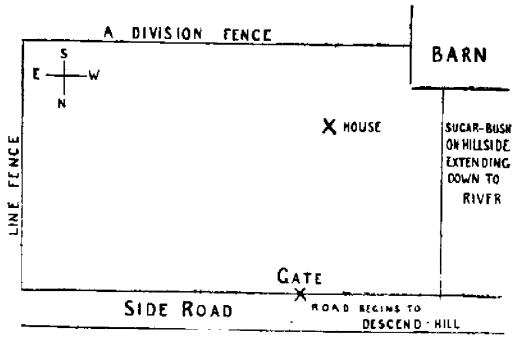

FIG. 1742.

course, whether straight or curving? 2nd. The house surroundings, the position and extent of lawn, the planting of trees and shrubs and what kinds?

The field is well protected from the west by a fine maple bush. The view from position marked for house is grand, especially to north. It is my intention to plant an orchard, having cherries and peaches on ridge, with apples towards the road. The soil is a good sandy loam, becoming more olay towards road. At present the only fixture is the barn. The field contains about seven acres. The distance from house to road is twenty rods, from house to barn about twelve.

SUBSCRIBER.

The following reply is given by W. H. Manning, Landscape Architect, Boston, Mass.:

SIR,—You ought to encourage such inquiries as you have referred to me, but in doing this you should insist upon their giving full information, otherwise no one can give them advice that will be of any real service to them.

About all I could say to your client would be to make the general statement that it is usually unwise to locate a house on the summit of a ridge for it makes the building unduly obtrusive and roads to such a site will be more difficult to construct and maintain. It is generally better to locate at the side or at the base of a slope, reserving views from a higher level for occasional enjoyment or for enjoyment from upper windows.

A large lawn on such a place, as I take it your correspondent has in mind, would be burdensome to maintain. It would probably be better for him to enclose a smaller piece of ground with a retaining wall or irregular belt of shrubs which he would keep under the lawn mower, the adjacent land to be grazed or kept under mowing.

The roads should be made as short as practicable, and curves should not be used unless there is a very good reason for them.

Your correspondent would do well to provide a flower garden and keep all his annual flowers in it, also a service yard for laundry, etc., should be separated from the other parts of the grounds by a plantation. Plantations about the lawn should be arranged to keep as much open grass as practicable. Very few large trees should be planted near the house.

This is about all I can say to your correspondent because the information which he gives is not sufficient for one to gain a clear idea of the conditions.

Note by Editor: We very much appreciate the above pointers coming as they do from Mr. W. H. Manning, one of the best authorities in the United States on Landscape Gardening.

We understand that very soon Mr. Manning will publish a little book in which directions will be given for the preparation of Surveys of small Home and School grounds. The cost will be only 25 cents.

Another book which would be of much use to our correspondent is a hand-book for Plan-

ning and Planting Home Grounds, prepared also by Mr. W. H Manning, and published by the Stout Manual Training School, Menomonie, Wis., price 35 cents.

The Flower Show.

SIR,—In our local Horticultural Society we are endeavoring to renew the interest this winter, and make it active for good in the community To this end we wish to do all in our power to advance the culture of flowers, both in the town of Leamington as well as amongst the fruit growers and farmers. It is proposed we have a flower show early in the season, also at the fall fair.

Knowing, dear sir, that you have had experience along this line in your own town of Grimsby as possibly elsewhere, I should very much like a few suggestions from yourself. If you can reply at an early date I shall feel doubly grateful.

E. J. M. EDELSTEN, Leamington.

The flower show held by any affiliated society may be made a great success, and prove the source of immense encouragement to the society if properly managed. The object aimed at must be the encouragement of exhibits from amateurs, and by amateurs we mean every member of the society. We are well aware that without large money prizes in view, the profes ional florists will scarcely think it worth while to exhibit, and their exhibits usually formed the grand total of the old fashioned Horticultural Society's exhibits. In such cases, where was the amateur's exhibit; where the well grown begonias or geraniums from the dining room windows; where the coleus or fuschia, or the calla, which have been the joy and the ornament of the home? Certainly not at the exhibition, for each one will say, "I have nothing good enough to win a prize." The way to succeed is to interest all these people, even the person who has but one solitary plant. To do this, the directors must appoint a committee on exhibits who will visit the homes of the members and take a list of the pot plants they consider suitable, providing also labels for the name of the owner. Then on the day before the show, the directors should send out a man to collect the plants and bring them to the hall, where a floral committee will arange them; and engage the same man to return the plants after the exhibition. This will cost some money, but it will pay big returns every time, for each family who has a pet plant at the show will be fully represented among the visitors, and bring their friends along with them. The result will be an abundance of of plants on exhibition, an abundance of visitors, and if a small fee of ten cents is charged all who are not members, the receipts will far over run all the expenses.

For the best results from an educative standpoint we would advise that a competent florist be always invited to attend, and be paid for his time, who would give information to all questioners regarding the correct names of the various plants, and the best care and treatment of them. In small towns or villages we would only have the show open one evening, possibly admitting the schools from 4 to 6 p. m., and the general public from 7 to 10 p. m., and providing some orchestral music to enliven the occasion.

It is by no means necessary to confine the exhibits to flowers; for vegetables and fruit are quite as much in place among horticultural products as the flowers.

Profitable Apples for Lambton.

SIR,—I am thinking of planting an orchard on Lake Huron near Forest, Ont., and as you have been referred to me as good authority to consult as to variety most adapted to that section of country, also how to plant them, distance apart, etc., I concluded to write you for porticulars. Of course I prefer the most profitable apple for market as that is my intention to make as much out of the investment as possible. Would you recommend planting plums between the apples or will it pay to do so? Can I find a market for them? Would also like the names and addresses of some of the reliable nurseries in Ontario. If you will please favor me with the above information I will be very much obliged.

W. RAWLINGS.

Our correspondent need not be in the least limited in his choice of varieties of apple trees for planting in West Lambton. Providing he has suitable soil and other other local conditions, he can grow any of the finer varieties he chooses. As to the most profitable apple for market no definite answer can be given. Some seasons the Northern Spy is the most profitable, when it ripens a firm flesh, a clean skin and a high color, but in other seasons, like the present, it decays too early, and is too small and irregu-

lar in size to be very profitable, unless in exceptional instances. Sometimes the Baldwin is the most profitable, when it gives a good yield of fair sized fruit, of high color, and firm enough to ship anywhere, but of late this variety has developed a bad habit of barrenness, and seldom yields a full crop. The Greening was once counted by many the most profitable commercial apple, sometimes giving immense yields of beautiful fruit. One fine old tree at Maplehurst yielded one season twenty barrels of marketable apples. Of late, this variety too has developed faults, in some cases being badly affected with apple scab, while its green color gives it a disadvantage on sale. The King sells for the highest price of any apple we grow, but unfortunately is no cropper, unless it should prove productive when set on Spy or some other stock. The Cranberry Pippin is a fine export apple when well grown, but some seasons it is warty and misshapen. The Ben Davis is a wonderful cropper in most places, and looks well on the market, but lacks quality. Ontario is fine every way, but the tree overbears, and is short lived. Ribston Pippin is also first class, but inclined to ripen too soon after coloring up, and the tree has very little vigor in Ontario. Blenheim Orange and Gravenstein are two very fine fall apples, probably the two best of their season. The fact is that the ideal winter apple for commercial purposes has yet to appear.

For particulars regarding methods of planting we refer our inquirer to Mr. Burrell's article on Fruit Culture in this number, which deals with that subject so well that we need not treat upon it here.

Sheldon Pear.

SIR,—On page 423 Horticulturist I saw a statement concerning the above named pear which I cannot fully agree with. As I live in the County of York, about twenty-five miles north of the City of Toronto, just about two miles south of the ridges, which makes the water shed of all the running streams north and south of this part of the country, we are very much exposed on all directions to the wind. We have a heavy clay soil mixed with black muck, very strong land. I have been trying to grow pears nearly thirty years and have a good many different kinds, and my Sheldons are doing equally as well as any other kind. I have some Sheldons top grafted which are now about 25 feet high and not even a twig injured yet by our piercing winter winds and frost. I have also some younger trees got from the nurseries which are now fine thrifty trees, bearing as well as the other kinds growing beside them. The ground where the old trees are growing is not cultivated, it is completely sodded over. The only fault I find is the unevenness of the fruit.

I would advise anybody in our district to plant a few Sheldons, as they are no more difficult to grow than any other kind as far as my experience goes. The quality is very good, as stated in the Horticulturist.

Almira. D. B. HOOVER.

We are pleased to have this opinion of Mr. Hoover's regarding the adaptability of the Sheldon pear to the County of York. Sometime ago we had some unfavorable reports concerning it from the fruit growers in York, which led to our remark that it was not quite hardy in York, which such testimony as Mr. Hoover's seems to contradict.

Sun Scald, Etc.

SIR,—Do you know anything of a preparation called Glen's Arborine to apply to fruit trees said to protect from rabbits, mice, sheep, borers, sun scald, etc. Agents are canvassing for its sale. Is it good for anything or a hoax. I have lost a great number of young apple trees from what I supposed to be sun scald, the bark dies on the south or westerly sides of the trunk of healthy trees, beginning on a small piece an inch or two in diameter, and each year enlarging until it kills or greatly damages the tree. It attacks a tree generally at the bearing age, sometimes the bark on the whole side of the trunk is killed in a season. Often the branches of old trees are affected in the same way. What is the cause and what will prevent it? I am very much discouraged by its ravages. My land is a heavy clay loam. We had nothing of it sixty years ago. Your reply through Horticulturist will much oblige.

WILLIAM A. WALLIS.

Humber P. O., Ont.

Glen's Arborine is dealt with in a separate paragraph, and need not be treated here, except than we warn our readers against paying money for new patent nostrums which, when tested, usually prove inferior to the usually accepted remedies.

Sun Scald is a very common trouble with apple trees in Canada where we have intensely hot sunshine in summer, and trunks or crotches unprotected by foliage. Probably the most common cause of the evil occurs in winter sea-

son, when the bark becomes more or less frozen by intense cold, and this is followed by a sudden change, and a hot sunshine upon the frozen bark causes ruptured cells and vital injury to the part affected. We know of no remedy, but the evil might be prevented by protection of the crotches and upper sides of the limbs from the rays of the sun. We have found the King and the Spitzenburg especially liable to this evil.

Open Letters.

Importation of Nursery Stock.

SIR,—I see by reports in late editions of your paper that nurserymen and fruit growers in your vicinity are still urging the Government to continue to prohibit the importation of nursery stock from the United States and compel nurserymen here to fumigate all home grown nursery stock before selling. These laws militate in favor of large growers of trees who do business mostly by agents, and against smaller growers whose business is mostly local, and also against the general planter who has to pay higher prices on account of said prohibition and fumigation, and judging by the names as given of those who had those meetings, they are the large growers of nursery stock and fruit growers who are inspectors and draw Government pay, and others whom they scare by stories of the terrible ravages of the San Jose Scale. I don't believe that the scale is half so bad as those inspectors would have us believe, who go about the country with their pockets full of bottled vermin, which they exhibit while in gardens and orchards where danger of spreading is greatest, and if it is such a serious pest it can be overcome by spraying the same as other scale and bugs and things.

I was glad to find that Mr. Dearness, one of the Government Commission, was of the same opinion as myself, and in the January 6th issue of *American Gardening* you will find a writer saying that he has proved that spraying with crude Petroleum will entirely destroy San Jose Scale without in the least injuring the trees.

A nurseryman who does a large business by agents can quit selling by April the first, have a large fumigation house, dig all his trees and fumigate them all at once, and ship and deliver at the proper time.

The small grower does business differently. He depends on the farmers and fruit growers in his vicinity to come in and get what they want. When spring opens they are very busy, and when they call for trees they are in a hurry and rather than wait to have their stock fumigated they will go home without it and not likely return, so we have in such cases to lose the sale or break the law. When a man has a certificate from a Government Inspector that his nursery is clean and has pressing bills to meet, which should he do? Laws should be framed so as to make it as easy to do right and hard to do wrong as is consistent with the public good.

I would be in favor of having competent inspectors inspect the nurseries twice a year at the owner's expense; give the clean nurseries a certificate to that effect on which they could do business without hindrance, where scale is found put a man in charge till every vestige of the same is destroyed. I also favor the importation of stock from Northern States when accompanied by certificate subject to inspection when opened here.

When the prohibition law was put in force nurserymen said prices would not be increased. But we find in some lines this year prices double what they were three years ago. The fact is there are not half enough apple trees in the country to supply the demand, and nurserymen are not slow to take advantage of the fact to raise prices when they can so easily get an advance.

Yours truly, A. W. GRAHAM.

Nurseryman and Fruit Grower, St. Thomas, Ont.