

Technical and Bibliographic Notes / Notes techniques et bibliographiques

Canadiana.org has attempted to obtain the best copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

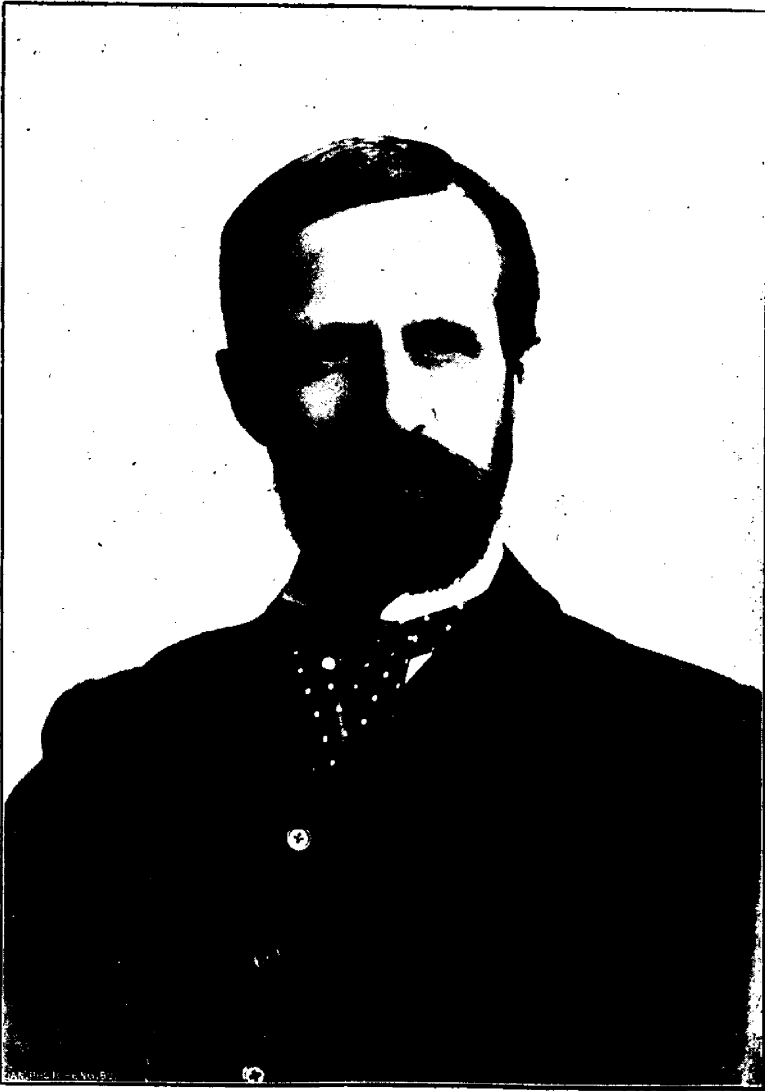
- Coloured covers /
Couverture de couleur
- Covers damaged /
Couverture endommagée
- Covers restored and/or laminated /
Couverture restaurée et/ou pelliculée
- Cover title missing /
Le titre de couverture manque
- Coloured maps /
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black) /
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations /
Planches et/ou illustrations en couleur
- Bound with other material /
Relié avec d'autres documents
- Only edition available /
Seule édition disponible
- Tight binding may cause shadows or distortion
along interior margin / La reliure serrée peut
causer de l'ombre ou de la distorsion le long de la
marge intérieure.

Additional comments /
Commentaires supplémentaires:

Continuous pagination.

Canadiana.org a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- Coloured pages / Pages de couleur
- Pages damaged / Pages endommagées
- Pages restored and/or laminated /
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached / Pages détachées
- Showthrough / Transparence
- Quality of print varies /
Qualité inégale de l'impression
- Includes supplementary materials /
Comprend du matériel supplémentaire
- Blank leaves added during restorations may
appear within the text. Whenever possible, these
have been omitted from scanning / Il se peut que
certaines pages blanches ajoutées lors d'une
restauration apparaissent dans le texte, mais,
lorsque cela était possible, ces pages n'ont pas
été numérisées.



LORD ABERDEEN.

THE
Canadian Horticulturist

VOL. XVII.

1894.

No. 4.



OUR GOVERNOR-GENERAL.



THE EARL OF ABERDEEN, Governor-General of Canada, whose portrait is given in this number, was born August 3rd, 1847, and educated at St. Andrews and Oxford (M.A., 1872). In 1880 he was appointed Lord-Lieutenant of Aberdeenshire. From 1881 to 1885 he was High Commissioner to the General Assembly of the Church of Scotland. From February to August, 1886, he was Lord-Lieutenant of Ireland. In 1893 he was appointed Governor-General of Canada. His Excellency has the honorary degree of LL.D. of the Universities of

Aberdeen and St. Andrews.

In Lord Aberdeen's early childhood, although the family lived near London, they had in reality all the advantages of a country life, because the Earl of that day (the grandfather of the Governor-General), who was for some time Premier of Great Britain, held the office of Ranger of Greenwich Park, and gave to his son, Lord Haddo (the Governor-General's father), the use of the Ranger's Lodge, a fine building on the edge of Blackheath Common, with a large and beautiful garden attached to it,—forming in fact a section of the historic Greenwich Park of which one reads in the "Fortunes of Nigel" and elsewhere. In those youthful days no pastime was so much enjoyed by the future Governor-General as working with the gardeners in their various operations in the shrubberies and pleasure grounds; and he had still further extended opportunities of a similar kind during the annual visits to Haddo House, Lord Aberdeen's home in Scotland.

The grounds of Haddo House have long been celebrated for their extent and variety, and for the care bestowed upon their upkeep. The "Premier Earl," during the long period that the estate was in his hands, planted some thousands of acres of trees of the ordinary kinds suited to the soil and climate, and he also formed a pinetum of rare and beautiful specimens, many of which have now grown to a considerable size. The present Earl has followed in the footsteps of his grandfather and his father, and has planted extensively, besides keeping up and developing the grounds, and adding considerably to the hot-houses.

His Excellency has also, for several years, rented a small estate, known as Dollis Hill, a few miles from London. This delightful place has become notable from the frequent visits which Mr. Gladstone has paid there to Lord and Lady Aberdeen. In this sequestered spot the great statesman has always found a quiet and pleasant retreat. At Dollis Hill, His Excellency has farmed about a hundred acres of land. The flower and fruit gardens, though small, are very productive and very pretty.

In 1890, in the course of a trip through Canada with Lady Aberdeen, the Earl purchased a farm of about five hundred acres in the Okanagan District, in the valley known as "Mission." There Lord and Lady Aberdeen have built a neat residence, and have named the estate "Guisachan," after Lady Aberdeen's Highland home,—"Guisachan" being the Gaelic for "the place of the firs." This estate has been laid out mostly in fruit, and promises well. Various kinds

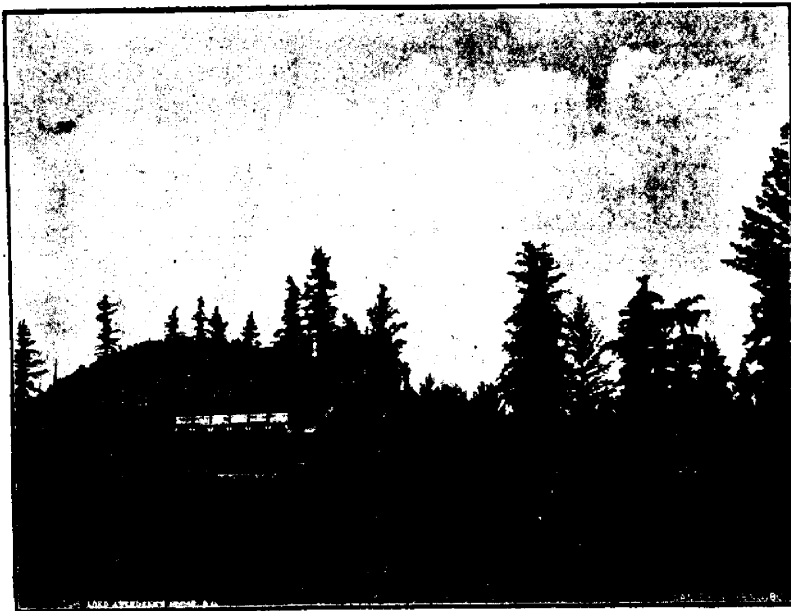


FIG. 693. —LORD ABERDEEN'S HOUSE IN BRITISH COLUMBIA.

of fruit have been tried experimentally from time to time, including some of the more tropical varieties, such as peaches. But Lord Aberdeen, we understand, does not consider that the nature of the soil and the climate make this a reliable crop, and intends that the land shall be devoted mainly to the cultivation of apples, pears, plums, etc. So far as can yet be judged, small fruits are likely to do extremely well.

The same remarks apply to the larger estate at Coldstream (near the town of Vernon, B. C.), purchased in 1891. This property is about twelve thousand acres in extent.

In order to develop the culture of fruit in the district, and also of course to benefit his own estate, Lord Aberdeen has erected a jam factory, and has also imported some first-class machinery; but until a larger area of ground is yielding fruit, it is not likely that the factory can be put into practical operation, inasmuch as it would not be worth while to run the machinery for only a day or two in each week. But the fact that the building is erected and the machinery there, ought to be an inducement and an encouragement to the cultivation of fruit. It was in truth put up in fulfilment of a promise made by Lord Aberdeen, and he considered that it was due to the district that the factory should be erected, so that there should be no uncertainty as to the opportunity for disposal of the fruit produced in the neighborhood. Of course the larger fruit trees are not yet bearing, but the manager's report on the area now under cultivation shows that the smaller fruits do well, and that hitherto the local market has absorbed all that has been produced.

THE SPECIFIC ACTION OF NITROGEN UPON PLANTS. — The influence of nitrogen in its various forms upon plant growth is shown by at least three striking effects.

First. The growth of stems and leaves is greatly promoted, while that of buds and flowers is retarded. Ordinarily, most plants, at a certain period of growth, cease to produce new branches and foliage, or to increase those already formed, and commence to produce flowers and fruits, whereby the species may be perpetuated. If a plant is provided with as much available nitrogen as it can use just at the time it begins to flower, the formation of flowers may be checked while the activity of growth is transferred back to and renewed in stems and leaves, which take on a new vigor and multiply with remarkable luxuriance. Should flowers be produced under these circumstances, they are sterile and produce no seed.

The *second* effect of nitrogen upon plants is to deepen the color of the foliage, which is a sign of increased vegetative activity and health.

The *third* effect of nitrogen is to increase in a very marked degree the relative proportion of nitrogen in the plant.

THE WESTERN NEW YORK FRUIT GROWERS—II.

Mr. Willard—The Kieffer Pear—Hardy Peaches—Grape Growing.



EXT to the worthy President, Mr. W. C. Barry, one of the most prominent members of this Society is Mr. S. D. Willard, of Geneva, N.Y., the Vice-President. Always wide-awake, energetic, humorous, he has a habit of popping up just at the nick of time to emphasize an important point, or to bring the house down with laughter and applause. We have been favored with his presence on several occasions at meetings of our Association, and our reports

show how valuable is the information which he has contributed at these times.

Although a specialist in plum culture, of which fruit he has some fifty varieties in bearing, he also grows cherries, quinces, pears, peaches, etc., quite extensively. His interest in plum culture was largely the result of a visit, some twenty-five years ago, to the Hudson river plum grounds, where he saw this fruit grown with such great success, that he determined to make it a prominent feature of his orchard work at Geneva, N.Y. This wisdom of his venture has since been well attested.

He was also one of the first to plant the Kieffer pear as an orchard tree in New York State, and good-naturedly bears the brunt of many criticisms, while he champions it as a profitable orchard variety. Though about sixty years of age, there is not a more enthusiastic fruit grower of any age in the State of New York, just the kind of a man to inspire the members of a horticultural society with confidence in their profession.

The Kieffer Pear came up for discussion again at this meeting, and Mr. Willard said he observed that it was being planted in every direction, and the only fear was over-production. He had been shipping them in car lots all the way to Chicago, where the commission men, instead of finding fault, only asked for more. They were just the pears to suit the purpose of the Italians, who retailed them on the street at high prices. The *Duchess* pear is also the leading variety in Genesee County, according to Mr. Irving Cook. It cropped well this last season, and sold at \$2 to \$3.25 per barrel.

Hardy Peaches.—The question was asked, "Are there any new peaches more hardy than the old sorts?" Mr. J. H. Hale said that some of our old varieties will endure 20° below zero, as for instance *Hill's Chili*, which is very hardy, and has not failed for twenty years. All of the *Alexander* type are very hardy and cannot easily be excelled by any of the newer varieties in this respect

The Elberta, from the South, is very hardy, more so than *Stump-the-World*, *Old Mixon*, or *Mountain Rose*, and these are hardier than *Crawford*; indeed it will rank with *Hill's Chili* and *Alexander*. The *Crosby* is also equally hardy with these; but it has the fault of overbearing, and then the fruit is too small. *Beer's Smock* is hardy and productive; *Steven's Rareri*pe is hardy, but inferior in appearance and a poor cropper, and sometimes mildews and blotches.



FIG. 640.—MR. S. D. WILLARD.

Mr. Smith, of Seneca Lake, said that in his district *Steven's Rareri*pe was one of the hardest and best of the white-fleshed peaches; and *Elberta* was one of the very finest of peaches for cultivation in Western New York. Mr. Willard said *Hill's Chili* was not very attractive in appearance, but it was the best canning peach that grows in New York State. At Geneva the canning factory has of

late been labelling the kinds of peaches they put up, and say they can sell this variety for more money than Crawford or any other variety they keep in stock.

Grape growing, according to Mr. Joselyn, was still the most popular industry in Chautauqua County, notwithstanding the low prices. The Union aided much in the sale of the fruit, and the low prices had brought grapes within the reach of the laboring classes. Last season the price on the average to the grower was 11 cents per nine-pound basket, which will probably be the average price of the future. The crop of 1892 in this county was 2,234 carloads, and in 1893, 2,587 carloads!

Apple growing, said Mr. Irving Cook, of South Byron, is now yielding us less profit than many other products of the farm.

The German prune had given Mr. Purdy more profit than anything else on his farm; nothing is better for evaporating than this plum, and no trees more vigorous and healthy.



FIG. 64b.—MR. J. H. HALE.

MUST THE ROBINS GO?



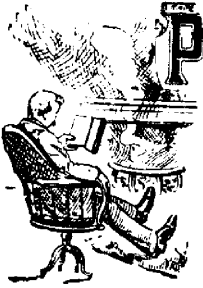
HE above is one of the questions that is now agitating my mind. For years I have done everything in my power to protect the robin. I have encouraged them to build their nests on my verandas, shot many a cat belonging to my neighbors in order to save them; but in return last year they took nearly all my cherries, fully half of my garden raspberries, and all of one kind of currants which I had fruiting for the first time. It is pleasant to see them around and hear them sing, especially in the early morning; but when we find that some one has to go, the fruit grower or the robin, then I say let it be the latter. There is no doubt that he is some good; he eats a white grub when he finds one, and will even strain his little neck pulling one out of the lawn, but there are other and worst pests more easily got at that he never touches, viz., cabbage and currant worms, and young potato bugs.

Why could not the Fruit Growers' Association import a sufficient quantity of bird netting to supply its members? I believe it can be bought for one cent per square yard in England, and our Government should allow it in free of duty. Even if we had to pay the duty it would more than pay the cost in one year. What say you?

St. Thomas.

A. W. GRAHAM.

GRAPE PRUNING.



PROPAGATORS differ as to the best time for cleft grafting the grape vine, but probably it may be done with best success in spring, just before the buds begin to swell. Any one familiar with the ordinary method of top grafting the apple tree, will have little trouble. The vine is cut off three or four inches below the surface of the ground, split with a grafting chisel, and held open with a wedge until the scion is fitted to its place. The scion need not be over six inches long, and should have a wedge-shaped end, smoothly cut, to fit the cleft in such a manner that when it is allowed to close, the bark of the old and new wood will be in close union. Use no grafting wax; but, if necessary, tie the cleft with a string, and then heap the earth carefully about the graft, leaving but one bud of the scion above the surface (Fig. 642).



FIG. 642.—CLEFT GRAFTED GRAPE.

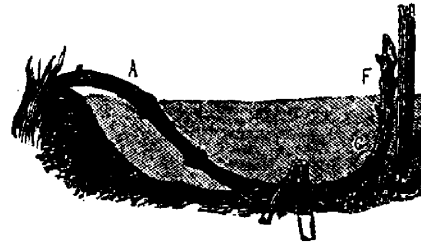


FIG. 643.—GRAFTED CANE OF GRAPE

fasten it in place with a peg, and cover the graft with earth, pressing it down firmly. Leave one bud above ground, and when you see signs of growth rub off all others between the branch and the main stump (see Fig. 643).

The earlier the scions are cut the better, while the buds are quite dormant; after they have begun to swell the scions would be useless. They can be kept in earth, or in green sawdust until needed. The wild vines can be grafted as well as the cultivated varieties.

RELATIONS OF NITROGEN TO FERTILIZERS. — Experiments have shown that nitrogen is essential to the growth of plants; that the quantities of nitrogen available as plant food are very small; that nitrogen is one of the first elements in the soil to be used up; that, of all fertilizing elements, nitrogen is and always has been the most expensive.

FARM BRIDGES.



FORTUNATE is the farm that has a stream of water running through it, for a brook or even a small rill not only brings many material advantages, but adds greatly to the attractiveness of a place. A much larger percentage of the farms of the country than one would at first thought suppose are crossed by running water, often necessitating bridges for the passage of farm teams, or a foot bridge for the family.

It is unfortunate that so many neglect properly to construct such bridges as are required, for in the often carelessly-built affairs that serve to span these streams, they miss both the element of safety and the element of good looks. Well-constructed farm bridges are capable of adding not a little to the attractiveness of a place. Throwing a couple of logs across a stream and covering these with a heterogenous collection of planks, or it

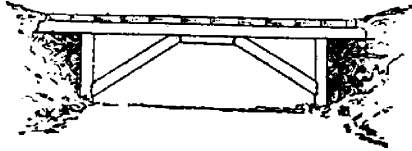


FIG. 644.

may be of round and uneven saplings, does not subserve safety, convenience or beauty. The illustrations given herewith show how farm bridges may be constructed simply but strongly, and in a way to give an air of neatness to the work. Fig. 644 shows an under construction in which the centre of the bridge is supported by two lateral braces, whose power of support, arranged in this way, is very great.

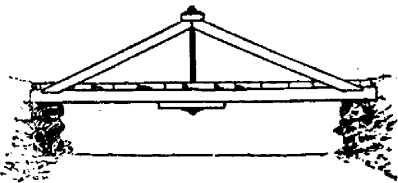


FIG. 645.

Fig. 645 shows braces arranged above the span, whose power is also great, the support being of the same nature as that

shown in the preceding figure, but differently applied.

Where still greater strength is desired for the passage of heavy loads, a combination of these two forms will be effective, as shown in Fig. 646, where the upper braces support the middle of the span, and the lower braces support that portion between the middle and either end. The ends of the stringers in such bridges should rest upon well laid rocks to give permanence and stability to the structure. Foot bridges are often needed, and here it is possible to achieve some really artistic effects, for rustic work, so often inappropriately used, is here

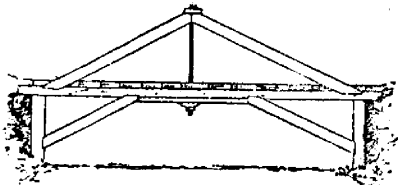


FIG. 646.

entirely appropriate to its surroundings. Fig. 647 shows a design for a foot-bridge, which may be used as a suggestion for a design for one's own. Pliant green withes form the sides above the flooring, and unpeeled trunks of small growth the portion below. Where slabs can be obtained with the bark still remaining upon them, they can be squared upon the edges, and used instead of boards for the flooring, thus adding to the rustic effect of the whole.



FIG. 647.

It is to be remembered that in all the figures given no attempt is made to show the entire bridge, but simply the elevation of one side. Such bridges will well repay their cost in the added security they give to men and animals, and in the air of business-like thrift which they give a place.—Country Gent.

Pruning Pear Trees.—Each year pear trees should receive a careful vigorous pruning. In December, cut the season's growth back from a half to two-thirds. This will generally leave about four buds on the new growth. Whether the trees be of a dwarf or standard variety this annual pruning should be given. Another thing: When pruning cut the branches so that the terminal bud will grow from the center of the tree, not toward it. Prune also that the terminal bud will not grow among other branches. Aim to prune so as to allow the largest amount of free air and sunlight. Sunlight will enhance the value of a barrel of large, red apples fully 50 per cent., and the same is true of pears, although the visible effect in the color is not so clear, yet the flavor is noticeably much improved. The Clairgeau is a variety that must have sunshine to mature properly. It is much like the Northern Spy apple in this respect. Annual pruning keeps a tree in a thrifty, vigorous condition of growth, and reduces the number of fruit spurs and buds. It is thus a system of fruit thinning as well.—Farm and Home.

Fertilizing Fruit Trees.—Fruit trees need as much care and as good manuring as any cultivated crop. Fruit trees especially give excellent returns for the manure given. When the trees are set out they should be well manured in order that they may get a good start. By well manuring, and carefully caring for an orchard, we not only get fruit early, but in abundance. In the case of dwarf fruit trees, whose roots do not penetrate very deep, a liberal dressing is absolutely necessary to obtain a good quality of fruit. As it is often quite difficult to obtain stable manure, sewage, or the like, we can get along just as well, and in some cases better, perhaps, by the rational application of artificial fertilizers, and in the case of orchards, we need not trouble ourselves so much about the mechanical condition of the soil.

RURAL MELANGE.



As we are getting a little thawed out up here in the "cold north," we begin to think about the coming seasons' work, though we expect to have old winter shut his grip on us once more before he goes back to his icy realm within the Arctic Circle; yet we can talk and anticipate, if we cannot do much. Fruit growing in the Ottawa valley is a specialty, not a matter of course work as in more southern climes, hence we have to work with brains before we do much with hands as to the best modes of counteracting the power of the cold weather; though we have one advantage and that is more freedom from injurious insects than our neighbors further south. Then again the snow mantle often lays on late as a protection, but when you find the most of your novelties have succumbed to Jack Frost, novelties for which you have paid out hard earned cash, it makes you scratch your head under a "second sober thought," that it is best not to listen to *all* the fine talk with which your ears are entertained by travelling drummers for "reliable" nurseries. "Experience teaches a dear school but fools will learn in no other," is one of the wise saws which our juvenile comprehension first gleaned from Noah Webster's old "Elementary Spelling Book," half a century ago, and it has lost none of its vitality of fact by age, judging from recent results in the experience of ardent devotees in the work of fruit culture in the vicinity of Ottawa.

But *nil desperandum* should be every fruit growers motto who has "come to stay" in the work; and when one thing fails, try another, until ultimate success, financial and otherwise, crowns his efforts.

Small fruits not only pay best, but succeed best in this climate, as the snow affords them most protection, and in the market they are less affected by southern importations; and as to *quality* of fruit, what we do grow is quite on a par, if not above that which has had the benefit of stronger sunshine than we enjoy.

As to the management of raspberries, I find that a good profitable result is obtained by setting them in rows 7 ft. apart, 4 ft. in the row, letting them spread to 2 or 3 ft. wide, and keeping out the old wood yearly, and the leaders cut back not too low. Cultivate the remaining space between the rows, with a dressing of manure once in two or three years, and do not lay down for winter protection. Some of my neighbors take pains to turn up to four or five canes in a hill, tie to stakes through the warm season, bury down through the winter, etc., and complain that their raspberries *dont pay!* The reason is obvious enough, when there is not canes enough on a given space for them to pay on. In proportion to the ground occupied, my raspberries paid better than my strawberries, last season the latter being above the average crop.

My experience with strawberries is to cultivate on the matted row system. On flat rich soil I ridge up, after filling a furrow half full of well rotted manure

(this saves mulching), thus giving the water a place between the rows, if a winter thaw takes place, as ice frozen around the plants is a fatal circumstance, no matter how well covered they may be through the winter. I find it best not to cover with straw until spring, and that as fast as the snow mantle leaves us. By putting manure under the rows with six inches of soil above it, three good crops can be taken off before plowing down. After picking season is over, a good way to clean the patch is to have sharp hoes and cut the matted rows up to a foot wide, pull out old weeds and grass, and good fresh plants will grow for the next season's pick. A picket fence around the fruit garden, and the raspberry patch running through the middle helps to keep the snow drifted in to a good depth which is very desirable for strawberries. I am putting long manure around my young trees and grape vines now (March 8th,) before the snow goes for the three-fold reason; to keep the frost in and trees back from budding too early; to serve as a fertilizer; and to keep in moisture around the trees and vines if the season turns out hot and dry, which is quite possible, nay even probable through this section, as the past two years we have had it rather wet for flat lands.

If we can anticipate the season with any degree of accuracy, we can "take time by the forelock" in many things; for instance we have a rich flat on which cauliflowers will succeed in a dry season, but on which last year they were a failure as they cannot bear too much moisture. As a rule, all vegetables, requiring strong soil to perfect them, must have a moderately dry location that they may feel out the right constituents to that end; lime and ashes can be applied profitably on damp soils to counteract the acidity which is largely a consequence where water lies any length of time, and where drainage cannot be effected without great expense.

We find onions a good paying crop if we begin with the hot-bed for transplants and keep up a succession for bunching through the season; and a good fall crop for marketing by the bag, through the fall and winter.

A winter supply of root crops, cabbage, celery etc., is a very good finale for marketing near a city like Ottawa, and, since potatoes have sold on an average of 75cts. per bag since digging time, other vegetables find ready sale.

But my *melange* is getting unbearably profuse, and I will close by correcting three errata in my article in the June No. of the Horticulturist of last year, entitled "Incentives to Agricultural Life." It should have been done before this, but it is not too late now. On page 210, fifth line from the top, for "administration," read admiration. In seventh line, for "obstruction," read observation. In the nineteenth line, for "aimed," read amid.

I.. FOOTE.

Elberta, according to some authorities, is one of the hardiest of peaches. It is excellent in quality and the tree is productive.

THE BLACK KNOT.



THE following letter appeared in a recent issue of the *St. Mary's Argus*, and was sent to the *CANADIAN HORTICULTURIST* for reproduction by Mr. T. H. Race, believing that it might at least awaken a new interest in the subject, whether the theory advanced be accepted or not. The contribution is from Mr. T. W. Gibbs, of Oshawa, who has evidently given considerable study to the subject:—

On pages 137 and 138, vol. 4, 1881, of the *CANADIAN HORTICULTURIST*, Mr. N. Hendrickz mentions a Belgian writer, the author of "God, His Providence in His Insects," who describes in that work the insect which is the cause of the black knot. Mr. Hendrickz, unfortunately, gives a very brief description of the little pest.

I think, Mr. Editor, that the scientific professors in our colleges and the entomologists have a good deal to answer for. If the average farmer had been told that the cause of the black knot was a very industrious insect, instead of a fungoid disease, there might have been a united effort made to check its ravages, but having been told that a fungus was the cause, despair has seized the average fruit grower, and the industrious pest has been allowed to multiply at his own sweet will, causing a loss annually in this Canada of ours of hundreds of thousands of dollars in fruit, to say nothing of trees. During the past thirty-five years I have been trying to persuade the fruit growers that an insect was the cause of the trouble and the "black fungus" the effect, but with very partial success. In the past two years I have talked with thousands of fruit growers, and in the county of Brant I have found 75 per cent. of the fruit raisers aware of the true cause; in the town of Goderich the same knowledge exists.

In the town of Paris I met the only man, besides myself, who had ever observed the fully developed insect. In appearance it is very similar to the "Curculio," but a little softer and a little more pleasing to the eye. I have met with one or two observant men who have seen it in the sheet along with the curculio, when they have jarred the trees for the latter insect, but I have never yet met with a man, besides myself, who has seen the mature female deposit her eggs. On the young branches of the plum and cherry she scores downwards in parallel lines one or two inches. Her cutter is entirely different from the curculio; the latter makes a crescent-shaped cut in the fruit, and then deposits the egg in the curve. The black knot insect has a cutter projecting from the proboscis, very similar to a phlegme. After cutting deep enough the outside bark curls off on both sides of the cut, then she deposits her egg in the soft succulent inner bark. In warm weather the grub soon hatches and immediately begins to eat its way into the middle of the limb; a spongy gall begins to form, and it is weeks, aye months, before the excrescence becomes black—in fact the fungus does not and cannot exist until the excrement of the grub exudes with the gum from the wound, making a suitable soil for the fungus, any more than the edible mushroom can be propagated without horse manure. If any observant man will make a careful examination of his trees in early June, he will see some small tender branches of his cherry and plum trees with the bark curling off on both sides. Careful examination will disclose the egg. I have many times seen the whole performance, and the egg finally deposited. Now, I will defy any man to propagate or inoculate plum or cherry with the fungus.

How is it that the fruit growers have never thought to enquire why, if their theory was correct, the fungus never propagated in the wounds caused by men's boots, ladders, etc.? It never did and never will *unless* the egg is laid and the grub ejects its excrement with the gum; later on the fungus appears.

Prof. Maynard (vol. xv. fol. 229 *CANADIAN HORTICULTURIST*) says: "The diseased wood should all be cut out or the disease will extend." I state emphatically it is not a disease, and if you cut the *grub* the *fungus* will perish for want of proper nutriment.

It is impossible for any man to find, either in plum or cherry, any black fungus one quarter of an inch beyond where the grub has eaten its way into the wood, and ejected its excrement. Cut out the grub or grubs (I have frequently found three or four), leave as many mycelium threads (see Prof. Pantou) as you please, not another fungus spore will strike root; they all perish for want of nutrition, in other words, want of excrement.

The grub is creamy white, with a brown head; when fully grown, about three-quarters of an inch long; has strong sharp mandibles; has six feet in front, terminating in sharp

points, dark amber color, curving backwards, just the shape of a buffalo horn, giving the grub a splendid hold while cutting its way into the wood.

If turpentine is applied freely enough to the excrescence, the grub will die without cutting out, and the limb will heal over, but the safest remedy is the use of the knife. Burn everything cut off and apply shellac to the wound.

If any entomologist wants to get a specimen of the mature insect, cut off the knots in May, on live limbs, place them in a glass jar, and in the hot weather you will see them eat their way out of the wood, slough their chrysalis and come out perfect flies.

*Answers to the above on the origin of Black Knot by James Fletcher
and John Craig, Central Experimental Farm, Ottawa.*

We are pleased to learn from the letter of Mr. T. Willis Gibbs that much interest is being manifested by the farmers and fruit growers throughout the country with regard to the origin and dangerous character of the Black Knot, so seriously affecting our plum and cherry trees. Every inducement which incites a desire among orchardists to study this enemy in all its bearings, is a source of congratulation, as a study of its habits cannot fail to reveal its dangerous character, nor fail to point out the only remedy known thus far, by the thorough application of which it may be successfully combated. It is for this reason then, viz., that of directing attention to the necessity of combined and co-operative action in fighting this enemy, that it is deemed advisable by the writers to review briefly the life history of this disease, stating concisely the facts upon which our belief in the fungous nature of the disease is based.

It may be well to state here that the disease known as Black Knot was carefully studied by Dr. Farlow, of Cambridge University, about twenty years ago, then and now the leading mycologist of America. We are indebted to this eminent scientist for much valuable data on the manner in which it grows and multiplies. Not the least important part of his investigations was that which at once proved its fungous nature and the possibility of transmitting the disease by inoculation from wild forms of cherries to cultivated garden and orchard varieties. Dr. Farlow states in a bulletin of the Bussey Institute, issued March, 1876, that "we have made direct experiments to show that the spores of the knot on the choke cherry *will germinate and produce the knot in healthy plum trees.*" He says nothing of the necessity of insect agency or assistance in developing the knotty growth.

With regard to the statement that the excrescences are entirely due to the attacks of an insect, the evidence submitted by Mr. Gibbs is very unconvincing to us. His description, too, of the insect shows that he has not devoted much time to the study of insects. We hope that next year he will make an effort to send specimens of what he believes to be the cause of black knot to the Editor of the CANADIAN HORTICULTURIST for identification. We will merely submit two facts: (1) At Ottawa the black knot is by no means a common disease, and in many instances there are no insects whatever to be found at any time in the knots. 2. Where the disease is abundant, the galls are as a rule much destroyed by insects. This injury is caused by various insects belonging to

different orders. Prof. Webster, in "Entomological News," for October, 1893, records having bred nine distinct species from one lot of knots collected in a single garden, and this collection did not include the plum curculio, well known to breed in the knots, as well as in the fruit.

The black knot is a gall or woody growth, caused by the attack of a parasitic fungus. In this gall when fully or partially developed, many kinds of insects make their home and feed upon its substance. Galls upon plants are caused either by parasitic plants or insects. Gall insects are divided into gall makers and inquilines, or guest flies. The former of these cause the gall, and the latter only live upon its substance. Both of these classes of insects are frequently infested by parasites, and in the case of the black knot, which is a fungus, all insects bred from the knots would be inquilines or parasites.

In an excellent bulletin on this subject by Prof. B. D. Halsted (New Jersey Ag. Col., No. 78), the life history of this parasite is given at length and an appeal is made to fruit growers to induce them to make greater efforts to eradicate so pernicious a foe.

Prof. Halsted says: In the first place, let the reader get a clear understanding of the nature of the enemy that it is proposed to conquer. There is no question whatever about the black knot being caused by a low form of vegetable growth called a fungus, that sends its minute threads through the substance of the twigs and branches. It is, therefore, necessary to gain a knowledge of this fungus, and for this purpose the accompanying engravings have been prepared. While it is generally assumed that the appearance of the disease is familiar to most of our readers, it has been thought well to give some illustrations. [These illustrations have been kindly lent to us by Prof. Halsted for this article.]

The beginnings of a young knot are first seen in a manifest swelling of the young twig, which is soon followed by a cracking of the bark, and in the rifts thus formed the threads of the fungus come to the surface and clothe it with a covering of olive filaments bearing multitudes of spores. A young branch is shown in Fig. 648, that exhibits the characteristic swelling of the initial knot and the cracks in the bark in which the spores are borne. A highly-magnified portion of a rift in the bark is shown in Fig. 649, in which the superficial stalks and their spores are seen. These spores are carried in all directions by the wind, and falling upon the surface of young shoots, germinate, send their filaments through the bark into the growing ring of soft tissue beneath and institute another knot.



FIG. 648.

As the season advances the young knots and the fresh growth of older ones lose their olive, velvety appearance, turn a dark color, and develop a hard incrustation upon the surface. Within the substance of this black and brittle layer many spherical pits are formed, as shown in Fig. 650, and as winter advances, minute sacs are produced upon the wall of the cavity, that toward spring bear each eight oval bodies that are known as sac spores. These escape from their long sacs and pass out through a pore at the top of the cavity, and are then ready to be carried by the winds to the surface of a young cherry or plum twig, and thus begin another knot, which, in the course of time, produces a new crop of summer and another of winter spores, and thus the disease is preserved and propagated. In Fig. 651 is shown two of the sacs with the

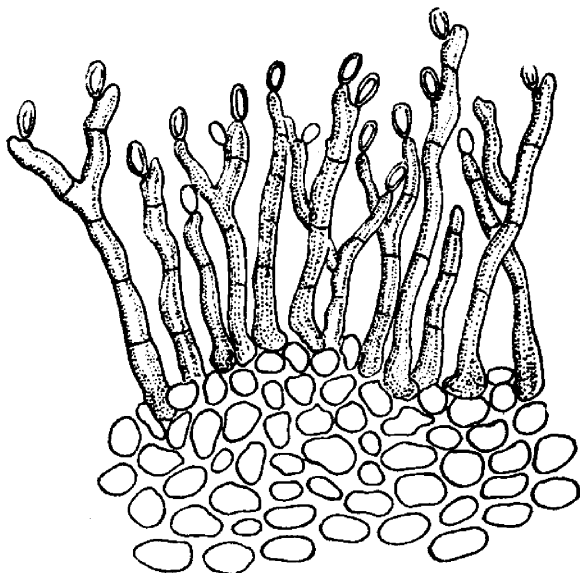


FIG. 649.

eight spores in each. A free spore is also shown in the process of germination. It is a fact that cannot be too emphatically stated here that the ascospores above mentioned are matured during the winter months, and that they will continue to ripen when the knots have been removed from the tree and left undestroyed upon the ground.

There are other forms of spores besides the two already pointed out, but their presence or absence does not change in the least the treatment that should be given to diseased trees, and therefore may be omitted from special mention. The fact of their existence only strengthens the previous conviction that in the black knot we have a fungus perennial in its character and wonderfully provided with methods of spore formation for the rapid spreading of the malady at all seasons of the year.

This pest is known to attack at least eight species of the genus *Prunus*. The appearance of the knot varies somewhat among the various species, but as Dr. Halsted points out, "it has been demonstrated by direct inoculation, that the spores from the knots of the choke cherry will produce the quite dissimilar excrescences common to the garden plum, a fact that in this connection it is important to know.

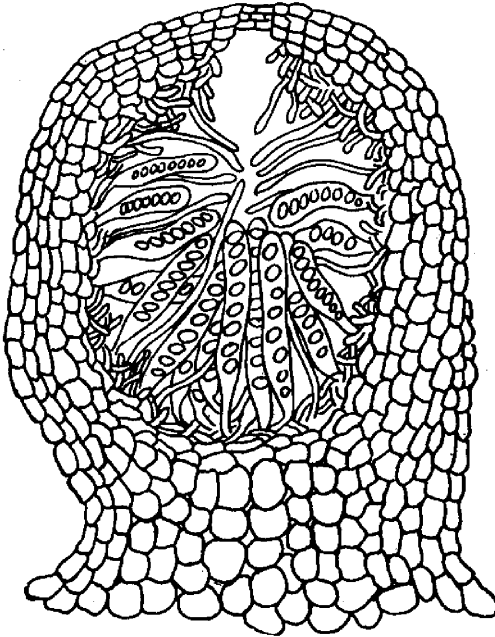


FIG. 650.

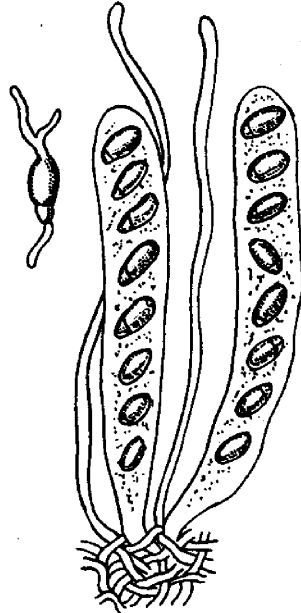


FIG. 651.

RECAPITULATION.

1. The fungus which causes the growth of the knots, was described by the celebrated German mycologist, Schweinitz, some 70 years ago. He was of the opinion, however, that the knots were caused by some gall-producing insects, rather than by the fungus which he found upon them.

2. Several species of insects have been observed, inhabiting the knots, but none of them belong to the gall-producing kinds, and most of these insects are also found upon other trees which never produce the knots.

3. A characteristic fungus is invariably found in the end fronting on the knots, from *their earliest* to their latest stage, and nowhere else.

4. The life-history of this fungus was carefully worked out and published by Dr. Farlow, in the *Bulletin of the Bussey Institute*, in 1876. At this time its communicability between wild and cultivated forms of the plum and cherry was proved by artificial inoculation.

5. The first manifestation of the presence of the disease is in the fall, and appears as a slight swelling of the bark along the branches. A microscopic examination of the tissues of these swellings reveals the presence of the mycelium of the black knot fungus *Plowrightia morbosa*.

Query.—Why should the excrement of various insects invariably develop a certain kind of fungous growth?

There is no better course of treatment known than that outlined by Mr. Gibbs, and it would be greatly to the advantage of the fruit interests of the country if orchardists would conscientiously carry out his recommendations.

APPLE AND PEAR SCAB (*Fusicladium dentriticum*).



IN order to secure the best results from spraying for this most destructive fungus, it is necessary to begin operations very early. Just before the leaf buds open out all the trees should be sprayed with a solution of *copper sulphate*, one pound to 50 gallons of water. This mixture must not be applied to the foliage itself as it would damage it very much, and therefore for later applications to leaves and young fruit the *Bordeaux mixture* is commended. The latest formula, as given in Prof. Shutt's paper, at our last annual meeting, is as follows :

Copper sulphate (blue stone).....	4 lbs.
Lime	4 lbs.
Water	50 gals.

The fresh burnt lime is allowed to slake, and then well stirred, with sufficient water to make a thin creamy mixture. This is now strained through coarse sacking into a barrel containing the dissolved copper sulphate, and the whole stirred and made up to 50 gallons. The sprayed liquor evaporates, leaving the copper on the foliage as a hydrate.

Later in the season, when the fruit is nearly full grown, and this copper residue would render it unsightly, the *Bordeaux mixture* need no longer be used, but in its place the *Eau celeste*, for which Prof. Shutt gave us this formula :

Copper sulphate	1 lb.
Strong Ammonia	1½ pints.
Water	22 gals.

The evaporation of this fluid leaves upon the foliage and fruit basic copper sulphate and ammonium sulphate.

The *Ammoniacal Carbonate of Copper* is by many preferred to the *Eau celeste*, and is prepared as follows :

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

QUICK GROWING TREES.



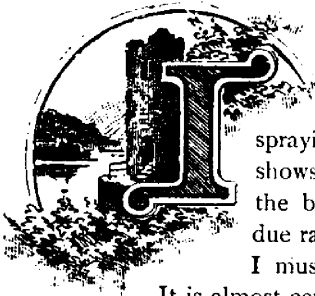
SEE that Mr. L. B. Rice, of Port Huron, under the above heading in the March number of the *HORTICULTURIST*, rather deprecates the willow as a wind-break and as an ornamental tree. For the former, in this part of the Province of Quebec, it has been a great success; rapid in growth, erect in form and branched to the ground. About twenty-five years ago, the white willow hedge craze had a great run, and hundreds of miles of it were planted from small cuttings, about ten inches long. Very few of these hedges were kept clipped, or attended to in any way; but the wind-screens that have resulted from them in many a drifting road district, and the handsome rows of shade trees, where they were thinned out along the roads, have given them a well-deserved popularity here; and the trifling cost at which a large plantation or long row can be set out, will always be a strong point in their favor. They are the first to leaf out in the spring and the last to lose their foliage in the autumn, and though they may not produce as much honey as the basswood, their bright, early, golden blossoms are where the bees derive their first store of pollen; and as individual trees along a village street, few there are which present a more picturesque appearance than well-grown willows. If their roots choke drains, so in a worse degree do elms, but we could hardly condemn the elm on this account. The Carolina, or broad-leaved poplar, is a very rapid grower, and so also is the Russian poplar, introduced by the late Charles Gibb, and both take very easily from cuttings, and either are far preferable, as far as brightness of foliage is concerned, to the Balsam poplar, or so-called Balm of Gilead. But let us not confound with these the common, so-called poplar, or aspen, pretty as a shrub but worthless as a tree.

Sherbrooke, Que.

W. A. HALE.

Whitewashing with the Spraying Pump.—The use of Bordeaux mixture in the spraying pump suggests that the machine can be used to good purpose in spraying whitewash upon greenhouse roofs, barn basements and fences. We now apply all the whitewash upon our larger glass roofs by means of a pump and nozzle. The whitewash is made in the ordinary manner, of lime and water, and is diluted to about the consistency of thin cream. If a large surface is to be covered, especially if it is difficult to reach, a direct delivery nozzle, like the Boss, or a common discharge nozzle, is used, and the operator stands several feet away. But if it is desired to cover the surface evenly and neatly, the McGowen nozzle is most satisfactory.—*Cornell Bulletin 61.*

FOR ROSE SLUG.—Try a mixture of two ounces of hellebore to two or three gallons of water.



SPRAYING IN 1893.

It seems hardly necessary, in the present year of grace, that anyone should write in defence of spraying, but Mr. Graham's communication on page 47 shows at least that the subject has not yet been sifted to the bottom. His poor success was, however, probably due rather to faulty methods than false inspiration, but I must admit it is hard to see where the fault came in.

It is almost certain, however, that it was either in the Paris green or the Bordeaux mixture. If the lime in the mixture were insufficient to convert all the copper into hydrate of copper, either from lack of quality or quantity, the copper sulphate would burn the leaves, and by that means might kill the tree. On the other hand, if the Paris green were of an inferior and possibly more soluble variety, the damage would be explainable in that way; or, perhaps—and here may lie a source of great danger in the use of Bordeaux—it may be that the Paris green is dissolved by standing even a short length of time in the limy mixture. It is well known that alkalis dissolve arsenic with tolerable readiness, and it is probable, though I do not know positively, that a mild alkali like lime may do the same thing, and if there is any considerable chance of that happening, it will be a bar to the use of Bordeaux that will suit some people very well, as it is the dirtiest and most inconvenient and disagreeable method for the use of copper as a fungicide. Some day we may use a plain solution of a copper salt used with equally good effect, and in fact statements of success have been written by people who have used sulphate of copper alone, but so far as I know none of the Experiment Stations have followed the matter up. I have used copper in ammoniacal solution with the best results, even with the admixture of Paris green (which does not at all agree with my theorizing above!) and while I have lost a few plums by curculio, I have had to thin out about one-third to one-half of the remainder by hand on the best trees. There is no doubt that the use of Paris green with ammonia may be dangerous, but by means of considerable care I have never had any untoward results. The poison has always been added just at the moment of use; and by using not too great an excess of ammonia, and delivering a fine spray, I do not think any ammonia whatever reaches the leaves in the spray, and the results have been the best.

Mr. Graham makes a good point in using Paris green for the first spraying on gooseberries and currants. It is more easily applied and probably more effective than hellebore. It reminds me of an experience which is noted in my gardening record:—

On May 21, '91, "Syringed bushes with hellebore; this should have been done on 14th; some branches are stripped nearly clean." On May 17, '92, "Put Paris green on currants and gooseberries, tho' no insects visible yet," and

that year I had no first crop of "currant worms." On May 23, '93, "Noted about 100 very small sawflies in a single leaf of gooseberry," and a few days later they were sprayed and killed. The lesson to be learnt is that prevention is better than cure. It was no more labor to spray the bushes on May 17th, '02, than on May 21st, '91, but in the one year my bushes had all their leaves to elaborate sap with, and in the other year they hadn't.

W. E. SAUNDERS.

London, Ont.

ARRANGING GROUNDS.



THE first essential of success in arranging grounds is the ability to recognize the characteristic and salient features of a place so as to work in harmony with them instead of coming into conflict with nature. To this end the individual quality of the surroundings of any place ought to be carefully studied before a tree is planted, a structure is erected or a path is laid. Few places, even when comparatively small, are so dull or monotonous that they are without a single feature which is worth emphasizing, and toward which, as a centre, the artist's thought is constantly directed. This may be a distant prospect, or it may be a craggy ledge, a strip of woodland, a noble tree, or only a pleasing sweep of surface. When this commanding feature is selected, all the other elements in a consistent scheme of landscape gardening are made subordinate and accessory to it. Of course, this central idea must be distinctive to be interesting, and in carrying it out, if it is to remain distinctive, we must not follow precedent too closely. Men too often plant certain trees in a certain way because other people have set them so, and in this way they are apt to make their estates humdrum and monotonous from lack of individuality. True, if a place is simply one of a hundred similar ones, like a regulation house and lot in a suburban town, there is little to do with such a featureless subject besides some formal planting, whose lines will be determined mainly by the size and position of the house; and such arrangements, when guided by good taste, can, at least, be made interesting.

In a region, however, of open farm-land, or in a woodland opening, or near the sea, the proper way is to study natural effects and subtly to conform all artifices to the suggestions of nature in the neighborhood. A great mass of rock, instead of being concealed by trees and shrubbery, should be made the most of in the outlook, and its lines of rugged strength should not be softened away, or its proportions belittled by any pettiness in its surroundings. If the approach to a dwelling is through a native forest-growth, this naturalness should not be marred by the introduction of species which do not belong to that region. There are enough native under-shrubs which are desirable in themselves, and which will be doubly so in such a place, where they help to emphasize the absence of artificiality. —Garden and Forest.

HEDGES.



N the Fruit Growers' Association Report of 1892, D. Nicol discourses upon "Hedges." I need not repeat what he has so well said in that article. There are pros and cons in respect to hedges, as there are in respect to any style of fence. The cost of hedge plants is a mere trifle. Fifteen to twenty-five cents will purchase good plants for a rod of honey locust hedge. About five times as much will purchase plants for an arbor vitæ hedge. To plant these in prepared ground along the straight side of a straight furrow, is a short job. The annual expense is not great, but it must be considered.

I like to leave a wide, cultivated border, and run a corn cultivator along each side half a dozen times each year for some few years at least. This, with the necessary hoeing, costs but little. The hedge should be cut back each spring; after a few years we use hedge shears once or twice each year. This job is best done after a sharp shower, which perchance prevents for a time the usual work on the farm. I find it so attractive that I rarely give up the shears till noon. He who is not prepared to give his hedge attention from time to time each year should not plant one at all.

The most serious objection to a hedge is the fact that its roots unfit the adjacent lands for many crops. Grass crops and pasture are not much affected. A hedge separating a road or a lane from a pasture field is therefore quite admissible. Where a head land is used as a driveway, or to turn upon with a cultivator, a hedge answers very well. At the rear of my place a honey locust hedge separates my head land from a lane which is much used by cattle. The plants stand upright, and having been pretty well cared for and sheared, there has been no need of tipping or bending them sideways in the hedge. To make assurance doubly sure, we have stretched one barbed wire within the hedge, three feet above the ground. Each and every cow has seriously considered the matter, and concluded not to go through that hedge.

Hedges have some advantages. Their cost, including annual care, is not great, while they endure for a long time. They are wind proof, and make a low wind break. They are beautiful and interesting; with one or two barbed wires they are an effective fence. I have for years used a locust fence along the road without any wires. A hedge is not reliable if planted near to a row of trees such as we often see along road sides. Try the hedge in one place and the trees in some other place.

Mr. Nicol makes one serious mistake. The honey locust is not possessed of sprouting proclivities. In this respect it is as virtuous as the ordinary forest trees. We have in Stamford Township a good many miles of honey locust hedge of various ages. Although planted upon hard clay much of it is very good fence. Where much neglected it has but little of beauty or utility. The men, rather than the fence, are at fault in the latter case.

Mr. Nicol has well stated the merits of arbor vitæ and other hedge plants. A compact arbor vitæ is for this purpose an improvement upon the common cedar. A nice hedge may be made with Norway Spruce, but we rarely see one. Norway spruces are largely used hereabouts as windbreaks. These in fifteen years reach a height of from twenty to thirty feet.

Niagara Falls South, Ont.

F. MORDEN.

KEROSENE EMULSION.

This emulsion consists simply of a mixture of soaps-suds with twice the quantity of ordinary coal oil, made as follows :

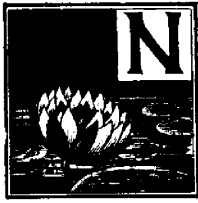
Kerosene (coal oil)	2 quarts,
Rain water	1 quart,
Soap	2 oz.

Boil the soap in the water till all is dissolved ; then, while boiling hot, turn into the kerosene, and churn it constantly and forcibly with a syringe or force pump for five minutes, when it will be of a smooth, creamy nature. If the emulsion be perfect it will adhere to the surface of glass without oilness. As it cools it thickens into a jelly-like mass. This gives the stock emulsion, which must be diluted before using with nine times its measure, that is 27 quarts, of water. It will be found to mix much more easily if done at once, before it cools. The above proportions give three quarts of the stock emulsion which with 27 quarts of water added, make up 30 quarts of the mixture ready for use.—Report by PROF. JAMES FLETCHER.

Constant Cultivation.—I noticed particularly in the peach orchards the present season that where the most thorough and liberal culture had been given, the trees suffered least from drought, and the fruit was of larger size and better quality than in the orchards where it was not possible to keep up the culture, after the growing fruit had so weighed the limbs that it was impossible to work among the trees. In the cultivated lands, the fruit kept on growing all through the season, but in the uncultivated orchards it was at a standstill for six weeks, until the rains came, and this simply taught us another lesson on culture.—J. H. HALE, in *Strawberry Culturist*.

FRUIT GROWING CONGENIAL TO SOME.—After forty years experience in business, I have no hesitation in saying that if I were commencing life, I would prefer fruit growing, after acquiring a scientific knowledge of the business, to any industry in the country—for health, wealth, and all that makes a success of human life.—J. W. BIGELOW, Wolfville, N. S.

SMALL GREENHOUSES.



NOW that the frosts of winter have made the outdoor garden mostly a study in sepias, consolation is found in the genial temperature of the greenhouse, and I wish to make a plea to flower fanciers and owners of small places to have one of these, no matter how unpretentious. While there is now not one greenhouse to a thousand gardens, this important adjunct would often be added if it were generally known that a small house is not an expensive structure, and that the maintenance is a trifle quite within the means of limited purses. Modest things are the most that many of us can compass in this world, and to wait for ideal things is simply to be ever without them. Granting that a greenhouse is desired, the most practical plan is to go ahead and build one, taking heed it shall not be a burden either in the first cost, or so extensive as to require much labor for daily care. It is well to locate the greenhouse near the dwelling, as it can there be better enjoyed. If the heater can be placed in the cellar it will be a great advantage, both in saving space, in keeping dust away from the plants, and for convenience of attention to the fire. A greenhouse is a space enclosed by low walls with a sloping glass-roof, in which there must be arrangements for ventilation. The walls are best and most cheaply made of a double thickness of boards with a lining of building-paper. These walls should be nailed to upright posts at the corners, and to others at distances of three or four feet. A drip board should be nailed on the top of each side wall at the same slope as the proposed roof, and on its lower edge a narrow projecting strip must be nailed to serve for a gutter. A two by six inch board will make a good ridge for a small house, and may be adjusted at the proper height and in the centre, or at one side, as it is intended to make a span or three-quarter span roofed house. If the house is to be covered with garden sash it will be necessary only to fasten a narrow s'rip, say, three-quarters by two inches, at every three feet; but for a glazed greenhouse, sash-bars are mortised in the ridge and drip-board, at proper distances to receive the glass. Cross-bars will be necessary to meet lower bars of ventilating sashes. The ends of the house are finished with sash-bars, in which the glasses should be fastened and butted, rather than lapped. This class of house may be built by any handy man used to carpenter's tools, and will cost, for materials in a house ten by fifteen feet, about \$75. It will be found preferable to have side lights on the side walls, and these sashes will add a little to the cost. It is advisable to have the inside of the house and all joints covered with white-lead in oil, but for the outside I prefer emerald green in a private garden. This color wears well, and the house is not such a staring object in the garden. It is difficult to see why a greenhouse should be painted

the usual white, for, at its best it is simply a necessary garden cover, which should be made as inconspicuous as possible. The heater and pipes for a ten by fifteen foot house, if well bought, should cost about \$50. A properly made base-burner will require attention only twice daily, and should keep the house at sixty degrees in this climate on half a ton of coal a month, or even less if the fire has more attention. To sum up, then, for a capital expenditure of, say, \$200, or less, and a yearly expenditure of \$15 to \$20, a greenhouse may be had which will give profitable returns of flowers and plants at all seasons, and be a source of endless pleasure. The work connected with such a house is not beyond the strength of the daintiest of the tender sex, if only some one can be found to care for the ashes and wash the pots. The daily routine is mostly an inspection and proper watering of each plant, and to one who knows his plants and enjoys them, this routine is a daily recurring pleasure, and not a task.—Garden and Forest.

We take pride in placing in the hands of our readers a good portrait of His Excellency, Lord Aberdeen, who, though so short a time among us is already one of the best loved of all the Governor-Generals of Canada. Fond of physical exercise, affable in disposition and youthful in appearance, he is a favorite with all who know him; and Canadians of every party, creed, or social position, are alike his most appreciative and loving subjects.

Nor less loved and admired is Her Excellency, Lady Aberdeen. Descended from the ancient kings of Scotland, and also from those of Ireland, it is no wonder that she has taken so deep an interest in the social and national prosperity of the Irish people, as was shown at the World's Fair in her Irish village which stood at the entrance of the Midway Plaisance. Those of us who visited it, found this village one of the most satisfactory of the attractions of the Midway Plaisance, showing both the Irish industries themselves in actual operation, and Irish character represented by numerous fine young Irish women, who all spoke in the highest terms of their distinguished patroness.

In His Excellency, Lord Aberdeen, the fruit growers of Canada may claim a brother, and one who will ever do his utmost to favor their commercial prosperity; as is well shown by the interest which His Excellency manifested in our fruit exhibit at Chicago.

Renewing Strawberry Plantations. — To renew old plantings, on thickly matted rows; just after harvest, with a sharp plow, cut away all the plants except those that will remain in a four or six inch strip along one side of the old row; thin to proper width, and treat as a new planting. By renewing each season in this manner, on choice land, six, and even eight successive harvests may be made from the same soil before it goes to other crops.—Miss. Exp. Stat.

SOME GOOD PLANTS.



FIG. 651.

THE *Yucca filamentosa*, or Adam's needle, seems to stand our cold winter better as it gets older. It makes a nice evergreen plant, and in summer (if the roots are not disturbed by digging) will give an abundance of flowers on strong stems, well raised above the plant to the height of four or five feet, and I have never yet seen them broken by the wind.

The *Japan Iris* is a new type of the old Flag, with double and single flowers of various shades and of different colors, making a grand addition to the list of border plants, and giving an abundant supply of bloom for a short time. They do not succeed well in a stiff clay, or on a too dry sandy soil, a dark sandy loam suits them best.

In *Pæonies* some of the newer kinds, with their fine markings will well repay the extra cost, and are a magnificent sight when in flower. They require little attention, but need a well-drained garden, a liberal supply of well rotted manure each fall, well worked in around the plant in spring.

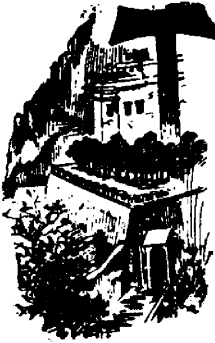
The *Perennial Phlox* is another of which there are some fine kinds, and, like the *pæonia*, will give an abundance of fine flowers, if treated in the same way; but when flowering, if the season is dry, they should be mulched with coarse grass, or partly rotten straw and watered occasionally. They suffer in very dry seasons, but will well repay a little extra trouble.

Fernhill, Ont.

J. M. WATERS.

Ever-Blooming Climbing Roses,—Roses, hardy enough to stand considerable frost, and to serve as climbers are scarce, but one of the best is *Gloire de Dijon*. This has often been known to get through safely when the thermometer has fallen to zero. It is a rapid grower, and in a few years will cover the gable of a two-story house. The delicious fragrance of the tea rose, one of its parents, is abundantly displayed. The rose, William Allan Richardson, is said to be a successful competitor with *Gloire de Dijon* in the old world. Has any one had good experience in this country with it?—*Meehan's Monthly*.

FERNS.



THE culture of ferns is now receiving considerable attention, but not nearly so much as it would if they were more generally known. The varied and graceful form and beauty of their fronds, make them exceedingly attractive objects for the window garden, the rockery, and ornamental plots. Throughout the world there are about 2,500 known varieties, about fifty distinct species of them are indigenous to Canada. They can be transplanted from their habitats without much risk of loss, and are easily managed, being seldom attacked by insect enemies, the plants endure for many years.

Ferns are of all sizes, from less than one inch to several feet in height, nearly all cryptogamous. Some kinds have creeping rootstocks by which plants are multiplied. Some kinds produce minute bulblets on their leaves, and which quickly form plants when planted in fine moist earth. The walking fern propagates itself by forming plants at the tips of its leaves turned down to the ground. Only one kind is entitled to be called the flowering fern, (*Osmunda regalis*) and its beauty does not so much consist in its flowers as in its leaves.

The tree fern grows to a height of many feet, but it can only be grown in a warm climate.

The bird's nest fern, (*Osmunda Struthiopteris*) of Russia, forms convenient accommodation for wild ducks at breeding time.

The female fern (*Pteris Aquilina*) is said to be an effectual remedy for the evil of the tapeworm.

The common polypody (*Polypodium Vulgare*) was employed by the ancients as a purgative, and is recommended as a preventive of melancholy and insanity, but its effects I cannot vouch for.

I do know, however, that for intermixing with cut flowers; for window gardening; and for decorating the dining table, ferns fill a place which cannot be supplied with any other class of plants known at present.

I have seen a Wardian case $3 \times 2 \frac{1}{2}$ feet containing 22 distinct species of exotic ferns, besides some mosses, wintergreen and violets; and it afforded the owner, as well as his family and friends a great deal of pleasure at comparatively small expense.

For the embellishment of cemeteries, parks and pleasure grounds, ferns are admirably adapted, whether planted in clumps, vases or around the bases of the trunks.

Some have been discouraged with the growing of ferns, because they had undertaken to grow tender leaved kinds in places exposed to parching winds.

The common brake or bracken, endures almost any exposure without

much injury; but the Maiden hair fern, (*Adiantum pedatum*), and many of the aspleniums are readily blighted by exposure to hot drying winds. Nearly all the ferns thrive best under partial shade and good shelter.

Some of the handsomest specimens of polypodium I have ever seen, out of a fern conservatory, were growing on the shady side of an artificial rockery.

Ferns are easily cultivated when the essentials are complied with. I have seen some thriving remarkably well in rustic flower stands, and the sword fern needs nothing better than half of a nail keg.

In their natural abode ferns are generally growing on land which has never been impoverished by cropping, hence it is evident they like a soil rich in humus. The most suitable kind of new soil for them is a mixture of leaf-mould, decayed turf and sharp-sand, nearly equal parts.

During the season of growth, a liberal supply of water is needed, at the same time stagnant water in the soil is disagreeable to them and good drainage is necessary. Plants growing in pots, boxes or fern cases, may be thoroughly drained by placing over the holes in the bottom, pieces of broken flower pots or charcoal, over this should be spread some moss to prevent the soil mixing with the drainage, thereby preventing the water from passing freely off.

Cataraqui.

D. NICOL.

Bulbs after Flowering.

Answer to Query 623. By Mr. C. W. Young, Editor of the "Freeholder," Cornwall.

Hyacinth bulbs can be flowered twice in the house in pots. They can be kept in the pots when done flowering, and in September or October well watered and put in a dark place in the cellar, needing nothing further except to bring to the light in about four or six weeks. Narcissus of all kinds, and tulips, can be treated the same way, or they can be shaken out of the soil when dry, and put away in a dry place till time to plant in the fall. They will not flower well more than two years in the house, and the second year bloom will be inferior. Crocuses will not bloom well twice in the house. Freesias, lachenalias and other Cape bulbs should not be taken out of the pots, but kept growing, if possible, as they improve from year to year. Bulbs of any kind grown in water are not much use for any purpose afterwards, but if not rotted it would do to plant them, and also bulbs flowered in earth in the house two years, in some corner of the garden, where they will continue to bloom in a fitful sort of way for several years. The small bulblets may be planted with the others. They may or may not come to anything, according to what kind they are.

PRIMULA OBCONICA, OR JAPANESE PRIMROSE.



THE great value of this plant is too little known, it is undoubtedly the nearest to a perpetual bloomer of anything that has yet been introduced. A plant or small clump in a five or six inch pot will continue to bloom, under fair treatment, for at least ten months of the year. This Primrose is absolutely free from insect pests and disease, it prefers a moderate temperature and some sun, but, will bear as low a temperature as the ordinary geranium without injury, the roots must be kept moist without wetting the leaves.

After commencing to flower it will continue to throw up stem after stem, each bearing a dozen flowers, delicately shaded from white to lavender, standing sheer above the foliage. The flowers are useful alike for personal decoration, or as a table plant.

The plants are easily grown from seed or can be purchased at a small cost. In June the clumps can be divided, repotted and kept in some shady corner and occasionally watered till wanted in Autumn. The leaves are said to irritate the skins of some persons, but I have never experienced any bad effects although subject to plant poisoning. The above cut is taken from "Book of Canadian Plants," Webster Bros., Hamilton.

Gravenhurst, Muskoka.



FIG. 652.—PRIMULA OBCONICA.

J. P. COCKBURN.

The Black Barbarossa.

(See Question No. 624.)

Hon. G. W. Campbell, of Ohio, the celebrated grape grower of the State, writes: I think Black Barbarossa was introduced into England some fifty years ago, and was said to be as large as Black Hamburg; but it does not seem to have attained popularity, and I see no mention of it for a long time. I see it mentioned in a French work, as a rare beauty, but inferior to the Chas-selas. I do not think it would have any value for out of door culture above the Hamburg.

ANNUAL MEETING OF THE ONTARIO BEE-KEEPERS' ASSOCIATION.



THE annual meeting of the above Association took place at Lindsay, Ont., January 9th, 10th and 11th, 1894. The Bee-keepers' Association consists of about 200 members, and last year of thirteen affiliated societies. The Association receives a grant of \$500 per annum. The membership fee is \$1 per annum. The funds are expended in salary of secretary and treasurer, expenses of directors and other officers, a grant for prizes to the Toronto Industrial Exhibition and the Western Fair, London; grants to thirteen affiliated societies, \$200. Then, during the year of 1893, each member received a copy of "The Canadian Bee Journal." The same holds good for 1894. Each member, as with The Fruit Growers' Association, is thus practically receiving a full return for his membership fee in this one item alone.

The balance of the funds are expended in necessary business expenses and expenditure in special direction as occasion may call for.

Reference has been made to affiliated societies, and a brief explanation in this connection will not be out of place. A County or District may organize an affiliated society of the Ontario by complying with the following regulation:— Each affiliated society must pay a fee of \$5.00 to the Ontario, and five of their members must also be members of the Ontario Bee-keepers' Association. In return, an affiliated society gets an annual money grant of a sum fixed by the Board of Directors of the Ontario Bee-keepers' Association. They also have the privilege of sending two delegates to the Ontario's annual meeting, who have the right to take part in all business as if they were paid members. The money granted to the affiliated society must be expended in certain directions considered to be the most useful plan, and this plan is indicated by the Ontario Bee-keepers' Association. This plan tends to give a local interest throughout the Province in the Ontario Bee-keepers' Association. For such a far-reaching work the Association finds it has hardly sufficient funds, and S. T. Pettit, Belmont, made a wise suggestion when he stated the work of the Association deserved greater support at the hands of the government.

The past annual meeting brought out some very valuable information. It is to be regretted that, like all other educative societies, those requiring information the most are those not present. The discussion on marketing honey came up, and one member suggested that, at the present price of honey, it was a food that could be purchased by the most economic; it had great nutritive qualities, and in many ways it was valuable. Bee-keepers were making a mistake in reducing the retail price; it would pay them better to allow a fair margin

for the cost of retailing, and in that way offer some inducement to those who came into greater contact with the consumer.

RIPENING HONEY.

It was pointed out that many bee-keepers were keeping bees and did not secure the best results from them because they did not give the bees sufficient room in the surplus compartment. When only one-half story was given the hive, the bees whilst finishing those sections had to go idle, whilst if two half stories were placed on the hive, the bees could be finishing the top tier whilst storing the fresh honey in the lower. In this way there would be no loss of honey through the bees being idle, and there would be less tendency to swarm.

With extracted honey the same. When only one upper story is used, the bees have to remain idle whilst ripening the honey, or the bee-keeper has to extract before the honey is in a proper condition. By using two upper stories the same plan would work as in the comb honey. It was agreed by one or two that the honey could be ripened after leaving the hive, but it was a difficult matter to prove that any benefit would be derived from such a plan. It was admitted the bees would gather no more honey, and it appears only reasonable that, if plenty of room is given, the bees can themselves do this at the least expense. With this added room the bees are kept in a more contented condition and will be less liable to swarm, a very important matter in securing the best results.

CANADIAN HONEY.

The triumphs of Canadian honey could, at such a convention, of course not be passed by in silence. Not only did Canadian comb honey score the highest at Chicago, but a Canadian firm (Goold, Shapley & Muir Co., Ltd.) took more awards in the aparian department than any other firm. Some of the firms with which they entered into competition claim, and doubtless justly, to do one half a million dollars' worth of business, in bee-keepers' supplies and honey, per annum. That Canadian bee-keeping is only in its infancy there is no doubt. In Canada about 200,000 colonies of bees are kept, whilst some European countries keep 1,600,000 colonies, and quite a number keep over 500,000.

R. F. HOLTERMANN.

Brantford, Ont.

IMPORTANCE OF PHOSPHATES. — The phosphates, like the nitrates, are found everywhere in the soil and are of great value in their relations to plants. The phosphates found in the bones are taken into the animal body in the food. All plants used as food contain small quantities of phosphorus compounds which they get from the soil. The phosphates taken into the body are partly given off in the excrement and urine.



The Canadian Horticulturist

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

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

✦ Notes and Comments. ✦

THE GRAPE GROWERS of Canada have important interests at stake. The French Treaty proposes the removal of the present 30% ad valorem duty on French wines; and, since many of these wines are artificially produced at nominal cost, and the freight rates from France to Montreal are so very low, the result will be to flood our country with spurious and doctored wines, in competition with our pure native grape wine. Now when we consider that Ontario has an area suitable for grape culture equal to the present area of the vineyards of France, and that already about four thousand people are interested in grape growing in our province, it is evident that it is of the utmost importance that this section of the French Treaty, at least, be not ratified.

APPLES FOR AUSTRALIA.—We have received a letter from the Hon. McKenzie Bowell, in which he calls the attention of the Fruit Growers of Ontario, to the possibility of opening up a profitable export trade in apples with Australia, during the months of October, November and December, the season when they have no native apples. At present apples are shipped to Sydney, N. S. W. from California, during these months, the principal varieties being Winesap, White Winter Pearmain, and American Pippin. The market value is from 10/ to 12/ per box, presumably bushel boxes. The duty is 1/ per bushel. To carry well the apples should be wrapped in paper, and as neatly packed as oranges.

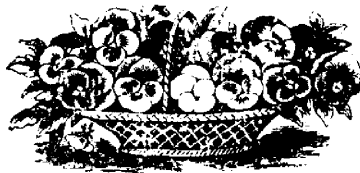
In order to know what opening there really is for us, we have written a correspondent in Sydney for further particulars, and also to the head office of the C. P. R. for through rates per 100 lbs. from Toronto to Sydney.

A MEETING of the Brant Fruit Growers' Association was held in Burford on the afternoon of the 22nd of February, and some interesting papers were

discussed. Mr. Lee, Secretary of the Association, gave the following list of rules which formed an agreement between himself and his pickers of small fruits: Mr. will pay 1c. a box for strawberries, 1¼c. for blackberries, and 1½c. for raspberries to all who comply with the following rules: 1. Pickers must pick the season through, health permitting. 2. Pickers must come at the time appointed and remain until dismissed. 3. No green or soft berries are to be placed in the boxes. 4. Pickers will not cross from one row to another. 5. Throwing of berries, boxes or anything else will not be allowed while picking. 6. Berries must not be left exposed to the sun after being picked. 7. Pickers will make sure that the number of boxes are entered on the books when delivered at the packing house. 8. Pickers may receive a part of the money at any time, upon giving notice the day before it is wanted. 9. Pickers will not use profane or vulgar language. 10. Pickers will be allowed fruit at wholesale prices.

FREIGHT ON APPLES TO AUSTRALIA.—We are in receipt of a courteous letter from Mr. Geo. Olds, General Traffic Manager of the C. P. R., in which he writes as follows:—"All Traffic, at present handled by this Company in connection with the new Australia S. S. Line, has been handled on an experimental basis as to through rates. We shall be glad to give all Canadian commodities a fair trial in the Australian markets before getting our rates up to a point which will give us some profit. We would be willing to carry apples in barrels and half barrels from Toronto, Hamilton and Grimsby to Sydney, N. S. W., at \$1.50 per 100 lbs., and, as the Australian market for our apples has not yet been tried, I will assure you this rate on any experimental shipments in carloads, that you may arrange to make from the next crop.

At present, the steamers leave Vancouver on the 16th of each month, and the time between ports is from twenty to twenty-one days. To reach Vancouver from the Ontario points above mentioned, we should require less than sixteen days from Toronto; and to be quite safe, it may be better to allow two or three days extra. We have already landed goods from Toronto at Sydney in thirty-four days.



✧ Question Drawer. ✧

625. SIR,—The Western Fair gives a prize for the Oswego Beauty pear. Is it the same as Oswego Beurre of "Downing"?

G. H. NIXON, *Hyde Park.*

So far as we know, there is no pear called Oswego Beauty. No doubt the Oswego Beurre is the pear intended by the prize list.

Wild Goose Plum.

626. SIR,—Are the Wild Goose plum and the Japan plum the same? Sixteen years ago I planted five trees of the Wild Goose, they blossomed every year, but never bore a pint of plums, and last year I cut them down. If the Japan plums are different, would you advise my planting any of them in this country?

G. H. NIXON, *Hyde Park.*

The fruit of the Japan plums is very much superior to that of the Wild Goose. The latter is a native American, and not worthy of cultivation where the finer varieties of English plums can be grown. The Botan and Abundance are two varieties of Japan plums which are highly recommended for extensive trial in southern Ontario.

Irrigation.

627. SIR,—Would it be profitable to irrigate for small fruits; plenty of water being available by raising it a distance of twenty feet from the bottom of a stream to the level of the field. What would be the best means of raising and distributing it, and the cost for ten acres, the land being sandy, nearly level.

G. H. BUCKRELL, *Springford. Ont.*

In the older countries, as India, Germany, Italy and Spain, irrigation has long been practiced, and so advantages is the practice that it is being more and more adopted. The same would no doubt be true in Canada, could we work it without too great expense. The usefulness of irrigation needs no proving, for not merely moisture, but fertility also comes thereby. In our correspondent's case the water could no doubt be pumped by a windmill, a steam pump, or a hydraulic ram. A reservoir might also be necessary, which would add to the expense, but if a pond of puddled clay could be constructed at the highest point in the ten acre field, the undertaking would be simplified. The water might be distributed by shallow furrows, so arranged as to give the ground a good soaking. A writer in the *Indiana Farmer* says:—A stream of water one inch in diameter, flowing at the rate of four miles an hour, will cover one acre of land one inch deep in about 30 hours.

The cost of irrigation of course depends mainly upon the ease with which the supply of water can be obtained. It has frequently been shown that where wells can be had of sufficient capacity the profits of irrigation are large in com-

parison with the cost. Where the fruit garden is located in close proximity to a lake, springs or running stream, the cost would be comparatively slight and the profits correspondingly increased.

Garden Cart.

628. SIR.—Can anyone tell me if a cart could be made with the shafts on one side like the shafts on a cutter, so that a horse could walk between rows of currants, raspberries, etc., in order to manure them, the wheels one each side of row?

GARDENER, *St. Thomas.*

Sawdust and Shavings.

629. SIR.—Would sawdust, or shavings from a planing or shingle mill be of any value as a mulch for berry bushes and grape vines?

G. H. BUCKRELL, *Springford, Ont.*

They would be useful on heavy soils, first as a mulch and afterwards to work into the soil and render it looser of texture.

Standard Weights.

630. SIR.—Is there a standard weight for raspberries and strawberries in Canada?

D. M. L., *Paris.*

In Iowa the standard weight for these fruits is 32 lbs. to the bushel. We do not know of one adopted in Canada.

Sulphate of Copper and Lime.

631. SIR.—Why do we mix sulphate of copper and lime for spraying? Does not the lime used kill the sulphate? Then why not use a weak solution of sulphate without the lime?

GARDENER, *St. Thomas.*

Reply by Prof. Shutt, of Ottawa.

Lime is added to the solution of copper sulphate (in the making of Bordeaux mixture) in order to precipitate the copper in an insoluble form, viz, the hydrate. Sulphate of copper, *even in dilute solutions*, is injurious to foliage, and if applied of such a weak strength as to be non-injurious, its efficacy as a fungicide would have disappeared. The hydrate of copper, which in the Bordeaux mixture remains in suspension and insoluble, has been found to be the active fungicidal principle of the Bordeaux mixture, and at the same time it is without any injurious effect upon the leaves. Besides precipitating the copper salt, lime also acts beneficially, in causing a greater adhesion of the copper hydrate to the foliage, thus lengthening the period of the efficacy of the spray.

Worms in Soil of Window Plants.

632. SIR,—Some of my window plants show signs of worms in the soil. I am told to use lime-water—"not too strong." How much lime per gallon of water can I use with safety? and is there anything else more effectual?

MRS. F. J. H., *Ottawa.*

Reply by Messrs. Webster Bros., Hamilton.

Water will only hold a certain amount of lime in solution and it is not injurious to the roots of the plants; nothing is so effective. Quicklime must be used, air-slaked lime that has gone to powder is of little or no value. The lime-water must be used at once, the sooner the better after it has settled; if exposed to the air and light, or even to the light alone, it loses very much of its value. Make sure that the earth is saturated and there will be no living worms left.

Ashes and Bone Dust for Grape Vines.

633. SIR,—What is the best manner to apply ashes and bone meal to grape vines, and what amount to each vine on sandy soils?

Reply by Prof. Hutt, Horticulturist, O. A. C., Guelph.

They may be applied separately, or, better, mixed in equal proportions. In either case spread evenly over the ground as far as the roots extend, which in the case of full-grown vines will be from one row to another. The amount to apply will depend some upon the size of the vine. To a full-grown vine, a good large shovel-ful, or nearly a peck, will be none too much.

Swamp Muck for Grapes and Berries.

634. SIR,—Would it pay to draw swamp muck half a mile to apply to grapes and berries?

G. H. BUCKRELL, *Springford, Ont.*

Reply by Prof. Shutt, Central Experimental Farm, Ottawa.

Although good, air-dried, muck contains about 35 lbs. of the valuable element, nitrogen, to the ton, I do not think it would pay to apply the *crude, untreated* muck to a vineyard—unless the soil were very light, and the tilth and retentivity would be improved thereby. Composted, however, with wood ashes, lime, or barnyard manure, a very valuable nitrogenous fertilizer would result, which would yield a large amount of plant-food to the growing vines. In a compost made with wood-ashes, there is also a large quantity of potash—an essential and important element to the growth of vines.

To Clear Rose Foliage of Worms.

635. SIR.—I have two climbing roses, "Gem of the Prairie" and "Baltimore Belle." Last year they were infested with the tiny green slug or caterpillar. I used whale-oil soap, in water, with very little benefit; then strong tobacco-water, with but little better results, only succeeding in keeping my favorites alive, though other roses were clean and healthy. Can you help me from your wisdom store? I think an insect powder would be more easily applied, if you will say what would be best to use.

MRS. F. J. HEATH, *Ottawa.*

Reply by Messrs Webster Bros., Hamilton, Ont.

Dust the foliage with fine sifted coal ashes or road dust; it gives the bushes an ugly appearance for a time, but will prove effectual and need only remain on a few days.

Area of Orchard.

636. SIR.—What is the amount of land in Ontario devoted to the orchard?

About 200,000 acres.

A. GREY, *Port Nelson.*

Word Pippin.

637. SIR.—What is the distinctive meaning of the word "pippin"?

A. GREY.

Pippin, or pip, is an old English word for seed, and a pippin-apple is one raised from the seed originally.

Pears for the North.

638. SIR.—How far north in Ontario will pears succeed? and what varieties would do best in this region?

C. A. JONES, *Murchison, Ont.*
(*Nipissing district, north of Belleville.*)

Some varieties, as the Bartlett, is too tender to be grown very far north of Toronto; but others, as the Flemish Beauty, are more hardy. Try Clapp's Favorite, Flemish Beauty, Ostrand's Summer, Oswego Buerre, and Seckel.

Grafting the Grape.

639. SIR.—What is the best method of grafting grape vines? When should scions be cut and grafting done? Can wild vines be successfully grafted?

WM. B. LEAVENS, *Chisholm, Ont.*

* Open Letters. *

Spraying Trees.

SIR,—I notice that Mr. A. W. Graham had poor success in spraying his trees. My experience differs from his. I began spraying my plum trees just after the blossoms began to fall, and sprayed them three weeks, once each week, with Paris Green. My sprayer was a brass syringe, which did very good work. The result was, that I got forty baskets of large plums from twelve trees; General Hand and Bradshaw sold for \$1.00 per basket, and the Reine Claude and Lombard for 75 cents. They took two first prizes at East York township fair, and two at Markham fair. In a previous season when I did not spray I had a very poor crop of plums, and my neighbor who did not spray last year, as a result has to pick his plums before they were ripe, because they rotted so badly and dropped of.

THOS. GARDINER, *Eglinton, York Co.*

Zanzibar Water Lilies.

SIR,—We derived great pleasure from our water lilies last year. Our tank is six feet across and eight inches deep, and in this we place six inches of rich soil—an old hotbed bottom would furnish the right thing. In the tank we put six plants in the first week in June, and in about two weeks the first flowers were open, and the plants continued blooming until the first frost in winter. There were from six to ten flowers open every day; the flowers opened in the morning and closed in the evening. We had one plant in a wooden pail and it bloomed, but the flower was small; one of those in the tank measured eight inches across, while that in the pail was only three inches. In some respects the flower is not equal to our *Nymphaea odorata*, but the easy manner of growing them places them a long way ahead of our natives. You have only to put the seed in a bowl or open dish in which is placed a couple of inches of soil, and keep it covered with water at a temperature of 70° or 80°, and in about two weeks they will have started to grow. At first the growth is slow and the leaves were only about two inches across when I planted ours out in June.

E. W. BOWLAUGH, *Kingsville, Ont.*

Judging Onions.

SIR,—For over thirty years I have exhibited onions at our township show, both from seed and the English Potato onion. Now I claim that if the prize list calls for (as ours does) 6 onions, red, white and yellow from seed, then 6 onions, "English Potato," that the intention of the directors is that the exhibit shall consist of six perfectly grown single onions. Some few years ago a party sent six bunches, but as there were five entries of single onions he got no prize. If bunches are to be shown, then I claim that the prize list should call for one peck of English Potato onions for planting; in that case I should pick out the best developed bunches, containing each at least eight small onions of good shape, as there is a great difference between a good sample and a poor one. Then I claim that a well grown single Potato onion can be known from any yellow onion from seed, particularly the Danvers, which is a pale yellow, for there are two very distinct peculiarities in a Potato onion when ripe and matured; first, you will find the yellow marking on the outside leaves to be darker, having a tinge of color different from other yellow onions; second, the first few outside leaves are always dry and feel like paper, and when ripe are always detached from the neck.

CHAS. JAS. FOX, *Delaware.*

✧ Novelties. ✧

Under this head we simply record the names of some of the recent introductions, together with points of merit claimed for them by the introducers, without any endorsement whatever of their claims.

THE TIMBRELL STRAWBERRY, and the ELDORADO BLACKBERRY are two fruits which are being widely advertised by Mr. E. W. Reid, of Bridgeport, Ohio; and which he is putting on the market for the spring of 1894.

The Timbrell is described thus: bloom late, imperfect; plant healthy, vigorous in growth, very hardy and productive; berry large, good quality, and a good shipper.



FIG. 653.—THE TIMBRELL.

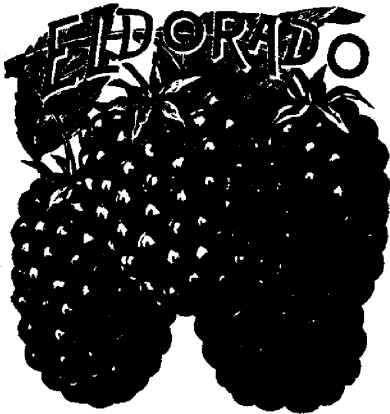


FIG. 654.

The Eldorado blackberry is an accidental seedling named after the town near which it was found. It has been cultivated for twelve years, and has been in the hands of the Experiment Stations for five years. Plants vigorous and hardy, productive; berries sweet, coreless and of extra fine quality. Mr. Reid says he has paid \$2,000 for the control of this berry.

PEARL SEEDLING.—A seedling of Houghton crossed with Ashton by Prof. Wm. Saunders. Plant upright, compact, vigorous, wonderfully productive. Fruit resembling Downing, but larger, roundish oval, whitish green, with the rib veins distinct; skin smooth; flesh soft, juicy and very good in quality.