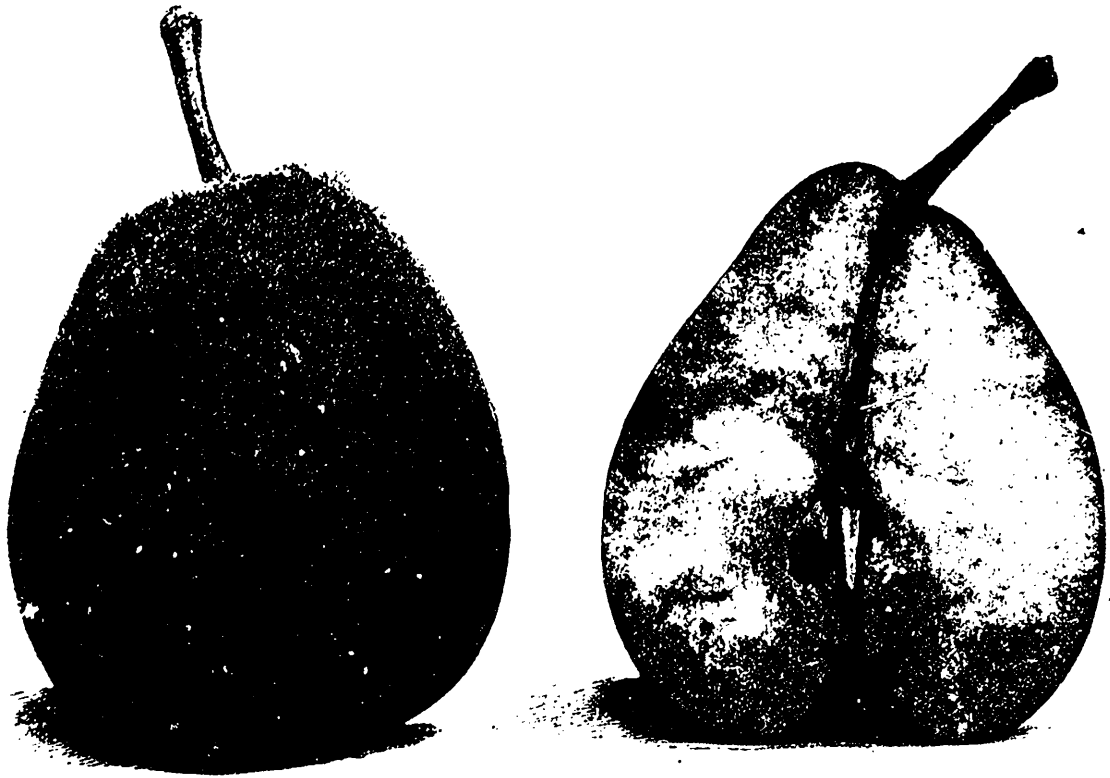


FIG. 2184. BEURRE HARDY.

THE
CANADIAN HORTICULTURIST
VOL 24 — 1901 — No 12

✳ ✳ DECEMBER ✳ ✳

BEURRE HARDY.

A good variety for the month of October, both for home use and market. The fruit is uniform in size, and the skin is covered with a bright clear russet.

ORIGIN: Boulogna, France; dedicated to M. Hardy, director of the gardens of Luxembourg, Paris.

TREE: fairly vigorous and productive, and forms a fine symmetrical form, especially when grown on the quince.

FRUIT: average size, 2 inches long by 2¼ inches broad; form, obovate, obtuse, pyriform, of smooth, regular outline; skin yellowish green, with numerous russet dots and covered with light brown russet, especially at the ends; stem, about an inch in length, stout, with a fold at the base, and inserted obliquely in a small depression; colyx large, open, in a shallow basin; flesh, white, fine grained, buttery, juicy, with rich aromatic flavor.

SEASON: October.

QUALITY: dessert, very good; cooking, good.

VALUE: home market, good; not exported as yet from Ontario, but exported with success from California to Great Britain.

COMMERCIAL PEAR GROWING.

DURING the last twenty-five years a complete revolution has come over commercial pear growing. In the year 1869 Mr. P. T. Quinn, Newark, N. J., published a book entitled "Pear Culture for Profit," which the writer read in 1871, and was thereby induced to plant freely of all varieties, with anticipations of a wonderful bonanza.

In speaking of the profits he said: "The subjoined list of the prices per barrel for which pears were sold in the New York market in 1866, '67, '68, I obtained from a responsible fruit merchant, who kindly placed his sales books within reach; thus enabling me to get accurate data on this important point. These figures also show the comparative market value of the leading varieties of pears for the last three years. It will be observed that the prices for 1868 averaged higher than the two preceding years. This was, in a measure, owing to a partial failure, both of the peach and pear crops, last season in the eastern states. Where there are three prices per barrel, opposite one variety, such as $10 to $16 and $25, the first two apply to the main crop, and the third to choice fruit of extra size, or else to a portion held back, until the chief supply was out of the market.

"In looking over the sales of pears in the New York market, I find the prices for

summer varieties are affected by the peach crop, ranging lower when peaches are abundant, than they do if peaches are scarce and high. This of course will not influence fall pears, and there is consequently less fluctuation in the prices of the latter varieties.

KINDS.	1866 PER BBL.	1867 PER BBL.	1868 PER BBL.
	$ $ $	$ $ $	$ $ $
Summer Belle.....	6 8	5 9	8 12
Bartlett	10 16 25	12 18 30	18 25 45
Duchess d'Angoulême.....	12 18	14 20 25	15 20 25
Beurre Bosc.....	14 18	15 20	18 20 30
Beurre Clairgeau..	16 20	18 20 25	20 25 30
Beurre Diel	22 16	14 16 20	16 18 20
Flemish Beauty....	10 14	12 16	14 16 20
Louise Bonne de Jersey.....	12 14 20	14 16 20	14 18 20
Virgalieu.....	12 18 25	14 18 25	14 20 30
Seckel	14 16 25	16 18 30	16 20 40
Lawrence	14 18	16 22	
Pound	6 10	8 10	10 12 20
Vicar of Winkfield.	8 14	10 14 18	10 16 20

"This list fully demonstrates to the fruit grower this important fact, that the varieties most extensively cultivated have steadily advanced in price. In 1858 we sold Duchess for $1.50 per basket, or $7.50 per barrel. Last year we sold them at $6 per basket, or $30 per barrel. In 1867 the same quality of fruit sold readily at $20 per barrel. That year the crop was an average one, except in a few localities.

"When a young orchard comes into bearing —say five years from the time of planting— the trees will produce from $50 to $75 per acre. The trees at this stage require strict attention; some may be inclined to overbear, others to make too much wood. From the former, a part of the fruit set should be removed before it attains the size of a walnut. If too much fruit is permitted to remain on young trees, it will take several years of careful management to repay the damage done. When they are making too much wood, and they are not inclined to produce fruit, a judicious method of summer pruning should be instituted to change the habits of the tree.

"When the trees are ten years old the receipts should not be less than $400 per acre, and there will be a steady increase in the returns, under proper management, until the trees have been planted fifteen or sixteen years, when the receipts will be at least from $600 to $800 per acre, and in many cases much larger. When choice pears command from $20 to $30 per barrel, as they have for the past three or four years, and this with a brisk market, it affords encouragement enough to induce horticulturists to make every effort to produce the best specimens of the varieties that the market demands."

Could anything be more misleading to an amateur or young fruit grower? And yet this book is still offered for sale as a book of instruction for pear growers! At the same time, anyone who is experienced knows that nowadays Bartletts do not bring an average of over $4 per barrel, and very often only $2; and that Seckels, which are quoted as high as $40 a barrel, can hardly find buyers in Canada, owing to their small size.

Several of the varieties named in the list we would now condemn entirely as not worth the space they occupy in the orchard; for example, Summer Belle, Virgalieu, Pound and Vicar.

The day is past when a pear will sell just because it is a pear, and, instead, the day has come when buyers want only the largest and finest pear of its season. These, if packed as they should be to certain grades and sizes, will sell in any market, whether home or foreign, and sometimes a hungry market will pay large prices. For example, last year Duchess brought $2.50 per half bushel case in Glasgow, which in Canada would not bring over 50 cents. This year they will not bring more than half that money in England, while our own home markets will pay $1, and the grower will get more money out of the latter than the former market.

The Bartlett will always be our best sum-

mer pear ; no pear can take its place while it is in the market, but we doubt the wisdom of planting it for export. We have tried several shipments of it every year for five years past, and failure has resulted more often than success. Under ordinary conditions failure is certain ; but, if a low temperature can be guaranteed from start to finish, success is probable or almost certain. Last September, for example, we forwarded 1120 cases of Bartletts to Glasgow for our shipping company, and the loss, considering our markets here, was nearly $1 a case, and all without government guarantee. The trouble seems to have been a defective link in the cold storage chain.

But when we forwarded firmer varieties, such as Duchess, Anjou, Louise, Bosc or Clairgeau, success and satisfactory returns usually followed. Such varieties as these, therefore, should form the principal part of all large commercial orchards.

A neighbor, Mr. D. J. McKinnon, has shown his confidence in commercial pear growing by planting out 9000 trees of such varieties, and he is maintaining them at a large expense of cultivation, with an assurance that he is making a safe investment.

MARKETING PEARS.

THE methods used in marketing pears vary so greatly in different parts of the country that it would be impossible to describe them all in detail here. The season of the year, whether summer or winter, the distance from market, the purpose for which the fruit is intended, as well as many other conditions peculiar to the markets of different cities, all have their effect in determining the methods used by the successful pear grower. The California grower packs his pears, mostly wrapped in paper, in neatly constructed boxes, shipping them in carload lots to New York, Boston, or other eastern cities, or perhaps to London. The fruit is sorted and packed directly after it is picked from the trees, and is expected to ripen in transit and open up in prime condition for eating 3,000 miles or more from the orchard. The grower of the Le Conte and Kieffer pear in the Gulf States also packs his fruit in wholesale methods, using barrels or boxes, and ships it in car lots or sometimes even in train lots, to northern cities. On the other hand, the Eastern gardener may ripen up a few bushels in his house and deliver them direct to his retail or wholesale customers. Large quantities of pears are consumed by the canneries, both on the Pacific Coast and in the Eastern States. The large crop of Kieffers, which is now getting to be such an important factor in the pear market of Eastern cities during the autumn months, is very largely taken up by the canneries, especially in Baltimore, and the trade in canned Kieffer pears is very rapidly increasing. For the canning trade the pears are almost always shipped in baskets of the type of the Maryland and Delaware peach basket, and the baskets are generally returned to the grower to be used over and over again. The price is often as low as 15 to 20 cents a half-bushel basket, and 25 to 30 cents is considered a good price. At this price Kieffer pear growing is immensely profitable. This can be readily understood when we realize that the yield is often more than 1,000 baskets per acre.—*Year Book of Department of Agriculture.*

FIG. 2185 APPROACH TO THE DIRECTOR'S HOUSE, CENTRAL EXPERIMENTAL FARM, OTTAWA. ALL THE TREES AND SHRUBS HAVE BEEN PLANTED SINCE 1889.

CENTRAL EXPERIMENTAL FARM NOTES—XIX.

THE weather during the past month was, on the whole, fine and mild and very favorable for fall work. It became considerably colder, however, on November 10th, and on the 14th, there were four inches of snow fell. On the same day last last year snow fell and remained.

At this time of the year plants have to be mulched to protect them during the winter, and while in some seasons when snow comes early and remains, there may not be much injury if this is neglected, the best practice is to mulch annually. At the Experimental Farm the bulbs, herbaceous perennials, grapes and strawberries are protected in this way. The bulbs and perennials are covered with a light dressing of long manure; the strawberries, with a light coat of oat straw; and the grape vines are bent down and covered with soil. When this precaution is taken there is very rarely much injury from winter. The mulch or straw and manure prevents, to a large extent, the thawing and freezing of the ground, which often does so much damage to herbaceous plants.

Comparatively little is known of the Arboretum and Botanic Garden at the Central Experimental Farm, except by those who have visited Ottawa and seen it. When the farm was purchased, in 1886, sixty-five acres were selected for this purpose, and planting was begun in the autumn of 1889. Most of the land is high, and a fine view is obtained of the city of Ottawa,

on the north and east, while to the south there is a pleasing view across country with glimpses of the Rideau river in the distance. The Arboretum is bounded on one side by the Rideau canal, which at this point has marshy banks which take away much of the sameness which the canal would otherwise have, and also afford a splendid opportunity for experiments with aquatics, though little has yet been done in this direction.

Twelve years ago, when the first planting was made, comparatively little was known of the hardiness of a large number of trees, shrubs and herbaceous plants, as the number of species and varieties found in gardens was limited, but now more than 3100 kinds of trees and shrubs, and over 1300 perennials have been tested and notes taken on all of them. The number of individual specimens of trees and shrubs living in the Arboretum at the present time is more than 4200 This large collection has been obtained from many sources. From donations of seeds from Botanic gardens throughout the world a large number of species and varieties have been grown, the Royal Gardens, Kew, supplying many of them. The catalogues of nurserymen in America, Europe and Asia have been searched to increase the collection until it is now difficult to obtain additional species of many genera.

The trees, shrubs and herbaceous plants are increasing in interest every season as they get older and are better established, and throughout the year there is always something to instruct the visitor.

Descriptive lists of hardy trees, shrubs and herbaceous perennials which have been found the most ornamental have been published, and have proven very useful to persons desiring to plant their grounds. A catalogue has also been published of all the trees and shrubs tested in the Arboretum up to the year 1899, and notes given as to their hardiness, but in this list no descriptions are given.

To one who had seen the Experimental Farm in 1887, and who had not visited it again until 1901, the change in what are known as the ornamental grounds must seem wonderful. The planning of these grounds has, since the Experimental Farms were established, been under the charge of Dr. Wm. Saunders. By his energy, a large proportion of the planting was done during the first few years of the Farm's existence and as a result the effects are much better than they would have been had the main planting covered a longer period of time. The road from the main entrance of the Farm to the office building which, when the work was begun had nothing along its margins to vary the landscape, save the fields of grain, is now at all seasons of the year brightened by the clumps of trees and shrubs which are grouped and scattered along its borders. The margins of the roads leading to the other buildings are also planted in like manner, while intervening areas are broken by lawns, flower borders, and flower beds. Some parts of the lawns now look quite park like where such trees as pine, spruce, birch, elm, maple, larch and other quick growing sorts have been distributed singly. Many of these are now more than twenty-five feet in height, and are excellent samples of the rapidity with which such trees grow when properly cared for.

Whoever doubts the possibility of making a complete change in the home surroundings by the planting of trees and shrubs, while one is young enough to enjoy the effects produced by them, should visit the Experimental Farm and see what has been accomplished in fourteen years.

W. T. MACOUN,
Horticulturist,
Central Experimental Farm.

FIG. 2186-7. VIEWS NEAR FRUITLAND.

VISIT TO FRUITLAND.

THE small district now known as Fruitland, comprising but a small portion of the mountain valley between Hamilton and Grimsby is well named. The name should be applied to the whole section from Hamilton to the Niagara river and it would be well applied and full of significance. It would be no reflection on the ancient land of Canaan to say that it was neither more fair nor fruitful than the fruitland of Ontario, stretching between the cities of Hamilton and St. Catharines, and including all the Niagara district. And in its tillage this picturesque and fruitful domain is as yet but few stages beyond its primitive beginnings in the husbandry of the vineyard, the orchard and the peach grove. What its future possibilities are he would be a bold prophet who would attempt to predict. That future depends largely upon human agency and the energy and enterprise of the favored population whose lot may be cast within its pleasant and advantageous environments.

In my recent visit to this fair and fruitful district I found much to gratify the occasional visitor. And only the occasional visitor can note at first sight how rapid has been the progress in some localities and on some farms; yet observe with equal readiness that the laggard is still a dweller in the land of such advantages. It would be safe tc say, however, that the unfortunate son of unthrift still to be seen here and there is not a reader of the Horticulturist, and has not yet felt the impulses of the progress and the civilization about him. With the natural wealth of soil beneath his feet and all the favorable conditions surrounding him, the laggard will have to move on, or the wave of progress, and the competition it brings with it, will some day strike him and he will either have to mount it or smother out, and give way to the man with an idea and the energy to turn it into thrift.

But these observations are only speculative and too abstract for the practical character of the Horticulturist, so I will get down to more matter-of-fact things. The greates. changes that I noticed in my recent visit to Fruitland, in the way of increased production, were in the lines of pear and plum culture. The most pleasing sight that I saw was a Kieffer pear orchard of 800 trees on the farm of Mr. Murray Pettit. These trees were about six years old, were handsomely loaded, and if the quality of the pear is at all commensurate with the bearing qualities and handsome appearance of the orchard the Kieffer has a promising future as a fortune-maker for its grower. Mr. Pettit was intending to ship the product of this orchard to the British market in cold-storage, and since my visit I believe has done so. The method of cultivation followed by Mr. Pettit was to keep some green crop constantly growing and turning it under. The ground was scrupulously clean and ready for a fall seeding during my visit.

On one of the mountain ledges on Mr. W. M. Orr's farm I saw another orchard of Kieffers two years younger than Mr. Petitt's, which presented a very attractive sight. The trees being younger were not so heavily laden, and stood more erect, bearing their fruit more in the centre, and as a natural consequence the pears were somewhat larger in size. It was from this orchard that the finest Kieffers seen at the Pan-American were picked. On a ledge still higher up the mountain side Mr. Orr has a young peach orchard planted, which will give on account of itself in a couple of years more. This farm I think is one of the most attractive in the Fruitland district owing to its many mountain-side ledges on each of which Mr. Orr has a large plum orchard in full bearing, besides his several pear orchards. Whatever went off this farm to the Pan-American, and whatever goes off it to market, whether it

be peaches, grapes or plums from the natural level, or pears and plums from the higher levels, everything in sample and quality is first-class. Mr. Orr is a believer in thorough cultivation, and in giving all there is in the soil to the fruit crop. He also follows a thorough system of spraying.

What attracted my attention much on this visit, as on previous ones, was the barrenness of the apple orchards. And I wonder why so many progressive fruit-growers still encumber their valuable grounds with apple trees that I have not seen a paying crop upon in ten years. On a farm so generally fruitful, and so well cultivated as is Mr. M. Pettit's, I observed an orchard of thrifty Baldwin and Greening trees with no fruit on them. Up in this county of Perth we can grow more Baldwins on six trees than I have ever seen on Mr. Pettit's whole six acres. And what is true of Mr. Pettit's apple orchard is true of every orchard I saw from Grimsby to Hamilton. The trees seem to have so entwined themselves about the hearts, and grown into the memories of their owners that the latter cannot bring their resolution into sufficient obedience to divine injunction to hew them down and cast them into the fire. Mr. Pettit, like many of his neighbors, is wasting much valuable ground in sparing those unprofitable apple trees.

I found considerable interest in looking through Mr. Pettit's experimental plot of grape vines, which he keeps in fine order. But the pleasure increases as one takes a ramble through his extensive Mountain Valley vineyard from which he gathered a clean and heavy crop this year.

I regretted very much not being able, for lack of time, to get down as far as Maplehurst farm, the home of our editor and secretary. I noticed much fine fruit from his premises at the Pan-American, and understood at the time of my visit to Fruitland that he was engaged in preparing an experimental shipment of pears to the old country market. I also noted in passing the improvements about his attractive home, which is now a spot of beauty and a delight to the eye of the passer-by and must be a joy unspeakable to the heart of the indweller.

T. H. RACE.

FIG. 2188. A VINEYARD AT STONEY CREEK, NEAR FRUITLAND.

PAN-AMERICAN HORTICULTURE—VI.

NINETEEN GOLD MEDALS FOR ONTARIO.

SIR:—I have put up four cases of apples from our exhibit at the Pan American for exhibition at your Cobourg meeting. They consist of a large number of varieties, some new and some old, but good samples. I have also secured a few York Imperial and Newton Pippins from Virginia. I have a list of the number and specimens of each variety, in each case and will come down and help you sort them out and place them on the tables. We will also have some year old apples from cold storage sent down.

The awards were officially passed to-night and I enclose you a copy.

St. Catharines. ROBT. THOMPSON.

The following is the

LIST OF AWARDS.

GOLD MEDALS.

Province of Ontario, display of apples of 1900, June 7.

Province of Ontario, display of apples of 1900, October 12.

Province of Ontario, display of eight cases different varieties of apples as put up for export and held untill August 17th in storage, opened up 97 per cent, good.

Province of Ontario, display of 163 varieties of apples of 1901.

Province of Ontario, display of 33 varieties of Strawberries of 1901.

Province of Ontario, display of 76 varieties of plumns of 1901.

Province of Ontario, display of 71 varieties of peaches of 1901.

Province of Ontario, display of 68 varieties of pears of 1901.

Province of Ontario, display of out-door grapes, 117 varieties.

Province of Ontario, display of house-grown grapes.

Province of Ontario, general display of fruits of superior quality and excellence.

Brennan & Son, Grimsby, display of peaches.

Dempsey, W. H. Trenton, display of appl s.

Orr & Son, Fruitland, fruits of superior excellence.

Pay, A., St. Catharines, display of fruits of superior excellence.

Railton, A., Fonthill, display of fruits of superior excellence.

Stewart, F. G., Homer, display of grapes of superior excellence.

Titterington, James, St. Catharines, display of fruits of superior excellence.

Woolverton, L., Grimsby, continuous display of fruits.

SILVER MEDALS.

Armstrong, Wm., Queenston.

Boyt, Geo., St. Catharines, for Asparagus.

Beattie, Thos., St. Catharines.

Bunting, Gordon, St. Catharines.

Burlington Horticultural Society.

Central Experimental Farm, Ottawa.

Collinson, S. & W. H., St. Davids.

Dempsey, H., Rednersville.

Freel Bros., Niagara.

Griffis, Alfred, St. Catharines.

Graham, R. J., Belleville.

Huggard, R. L., Whitby.

Merritt, T. R., St. Catharines.

Pay, A., St. Catharines, for asparagus.

Peck, Francis, Albury.

Purdy, C. F., St Catharines.

Pettit, M., Winona.

Peer, Geo. N., Burlington.

Rickard, Wm., Newcastle.

Read, M. A., Port Dalhousie.

Read, M. A., Port Dalhousie, seedling grape, Lincoln.

Secord, C. E., St. Catharines.

Shepherd & Son, Queenston.

Stephens, C. L., Orillia.

Smith, A. M., St. Catharines.

Tweedle, Jos., Fruitland.

Thompson, Robert & Son, St. Catharines.

Ontario Experimental Stations.

Province in Ontario—Fruits in solution

BRONZE MEDALS.

Adams, E. P., Queenston.

Bradley, H. C., Queenston.

Bartlett, John, Oshawa.

Currie, Robert, Niagara.

Culp, S. M., Beamsville.

Cockburn, J. P., Gravenhurst.

Chaplin, W. H, Newcastle.

Dunn, Joseph, St. Davids.

Fallis, R., Harriston.

Fisher, C. E., Queenston.

Graham, R. J., Belleville.

Horning, Geo., Burlington.

Hagaman, T. C., Oakville.

Hambley, J. E., Cedar Springs.

Hilborn, W. W., Leamington.

Hopkins, W. V., Burlington.

Honsberger, C. M. Jordan.

Jackson, W. K., Niagara.

Kivell, T. H., Bridgeburg.

Leckie J. A., Clarkson.

Law, Geo., Niagara Falls.

Lowrey, Chas., Queenston.

McGregor, J., Whitby.

Morden, E., Niagara Falls.

Morris, Stone & Wellington, Fonthill.

McLaren, J., St. Catharines.

Oysier & Son, Bloomfield.

Peart, Edwin, Burlington.

Peart, A. W., Burlington.

Patterson, J. A., St. Catharines.

Randall, J. D. W., Niagara.

Scott, John, St. Catharines.

Sexton, John, St. Catharines.

Shepherd, R. W., Que. Como.

Vanduzer & Griffith, Grimsby.
Caston, Geo. C., Craighurst, fruits in solution.
Hutt, Prof., O. A. C., Guelph, fruits in solution.
Woolverton, L., Grimsby, fruits in solution.
For Horticultural Literature, (Province of Ontario) Ontario Fruit Growers' Association.

HONORABLE MENTIONS.

Allan, W. J., Homer.
Amburst, H. J., Pelham.
Arnold, E. & Son, Queenston.
Anderson, Dr. H. L., Niagara.
Ashbaugh, C. D., Mohawk.
Andrews, Rev., Beamsville.
Adams, E. E., Leamington.
Brown Bros., Fruitland.
Brown, H. J. & Son, Niagara.
Bruner, John, Rathbun.
Bruner, Thos., Kingsville.
Bell, Jas., Whitby.
Backus, M., Chatham.
Black, Geo., St. David's.
Bennet, G. H., Walkerville.
Biggar, G. C., Niagara Falls.
Bromley, J. E., St. Catharines.
Bufton, C., Niagara.
Clement, John, Brantford.
Campbell, Chas., Queenston.
Coatsworth, G. M., Kingsville.
Collins, H. E., St. Catharines.
Cameron, R., Niagara Falls South.
Carty, James, St. Catharines.
Craize, Jas., Niagara.
Dunn, L., St. Catharines.
Ellis Bros., Stamford.
Ellis, Wm., St. Davids.
Freeman, W. H., St. Catharines.
Freeman, J. S., Freeman.
Freshwater, A., Grimsby.
Fisher, J. O., Virgil.
Fisher, W. F. W., Burlington.
Fisher, Geo. E., Freeman.
Grobb, J. C., St. Catharines.
Ghent, T., Burlington.
Griffis, A., St. Catharines.
Havens, J., St. Catharines.
Haynes, A., St. Catharines.
Haynes, L., St. Catharines.
Hague, Jas., St. Catharines.
Hendershot, W. M., St. David's.
Hunsberry, W. A., Jordan.
Hurd, H. H., Burlington.
Hunter, Charles, Niagara.
Hiscott, Major Jas., Virgil.
Jones, Harold, Maitland.
Johnson, Geo., St. David's.
Kane, W. J., Niagara.
Lampman, Joseph, St. Catharines.
Lawlor, B. A., Whitby.
McIntyre, E. J., Niagara.
McCalla, W. C., St. Catharines.
Mitchell, J. G., Clarksburg.
Myerscough, Thos., Caledonia.
Myles, A., St. Catharines.
O'Malley, D., St. Catharines.
Parnall, S. E., St. Catharines.
Parnall, Jas., St. Catharines.
Painter, Richard, Jordan.
Pritchard, J. J. Harriston.
Pattison, F. G. H., Grimsby.
Prest, Percival. Stamford.
Pendergast, John & Son, St. David's.
Pettit, A. H., Grimsby.
Pettit, A. C., Southend.
Pettit, C. C., Fruitland.
Pettit, C., Niagara Falls.
Ramsay, Allen, Niagara.
Robertson, Geo. A., St. Catharines.
Robinson, Jos., Niagara.
Springer, D. W., Pt. Nelson.
Slingerland, M., Niagara.
Symington, James, Port Dover.
Shepley, Isidore, Kingsville.
Sandham, James, Queenston.
Stephenson, E. B., Jordan.
Stewart, Alex., St. Catharines.
Smith, E. D., Winona.
Shearer, Sam, Niagara.
Vrooman, W. H., Queenston.
Wilkins, O. F., Bridgeburg.
Woodruff, H. C., St. David's.
Warner, W. A., Trenton.
Watt, Dr. T. H., Niagara.
Wyld, Mr., Hamilton.
White, C. E., St. Catharines.

The following table shows in detail the number of awards in each State in gold, silver, bronze, and honorable mentions, together with a table showing the total number of awards in each class.

	Gold Med.	Silver Med.	Bronze Med.	Hon. Mention.	Total.
New York	42	47	103	173	363
Ontario	19	33	35	85	166
Oregon	12	11	40	14	77
Washington	12	11	16	17	56
Illinois	12	5	20	14	51
Michigan	5	10	18	26	56
Florida	7	5	5	..	17
California	6	3	6	8	23
Missouri	8	2	82	6	98
Wisconsin	3	4	17	14	38
Nebraska	3	2	2	3	10
Delaware	3	5	19	13	40
Connecticut	3	2	14	8	27
Idaho	3	2	8	11	24
Maine	2	1	12	3	18
Virginia	2	3	22	11	38
New Mexico	..	2	3	5	10
Minnesota	1	1	6	8	16
New Jersey	1	1	13	7	22
Nova Scotia	1	1	3	3	8
Kansas	..	1	1	1	3
Arizona	.	1	1	2	4
Mexico	1	1	3	5	10
Ohio	..	..	1	1	2
Pennsylvania	..	1	..	1	–
Chili	..	1	2	1	4
Quebec	..	..	1	..	1
N. Hampshire	..	.	1	..	1
North Dakota	..	..	..	5	5
Iowa	.	..	1	..	5
Indiana	..	..	1	..	1
Dist of Columbia.	..	..	..	1	1
Jamaica	..	1	..	..	1
Peru	..	..	1	..	1
	146	157	457	446	1,206

Total entries in all States—3,661.
Total awards in all classes..... 1,206
Total gold medals given..... 146
Total silver medals given..... 157
Total bronze medals given..... 457
Total honorable mention..... 446

COMPARISON WITH GROUPS OF STATES.

The following gives, in tabular form, a comparison of Ontario winnings as compared with the combined winnings of three American States.

The following gives a similar comparison with three American States.

	Gold.	Silver.	Bronze.	Hon. Mention.
Illinois.....	12	5	20	14
Michigan.....	5	10	18	26
Missouri	8	2	82	6
Total.....	25	17	120	46
Ontario	19	33	35	85

Another comparison with six good States:

	Gold.	Silver.	Bronze.	Hon. Mention.
Florida.....	7	5	5	..
Delaware.....	3	5	19	13
Maine.....	2	1	12	3
Wisconsin.....	3	4	17	14
Nebraska.....	3	2	2	3
New Jersey.....	1	1	13	7
Total.....	19	18	68	40
Ontario.....	19	33	35	85

THE WINDUP OF THE FRUIT EXHIBIT.

Mr. W. L. Smith of the Sun writes of the grand display by Ontario at the close of the exposition as follows:—

The Ontario fruit exhibit at Buffalo is being wound up in a blaze of glory. So abundant are the supplies now going forward as a result of voluntary effort on the part of the contributors, that Superintendent Bunting was last week obliged to arrange for an overflow exhibit, and this is now tastefully displayed about one of the pillars in the principal aisle of the Horticultural building.

The two most striking features in the principal display made by the Province last week were in the form of two great mounds of apples, one located at each end of one of Mr. Bunting's tables. One of these mounds was made of Fameuse (Snow) apples, and the other was composed of Spys—the former having been contributed by R. W. Sheppard, Montreal, and the latter by Warden Rickard of Durham and Northumberland, and W. H. Dempsey of Trenton. These mounds caught the eye of everyone who came near, and the artistic arrangement and fine quality of the fruit were greatly admired. Mr. Sheppard it may be noted in passing, for years sent the late Queen Victoria an annual present of Canadian apples, and this year he has continued the present to King Edward. In commercial matters he makes a specialty of boxes of carefully selected fruit for the Army and Navy Stores in London—selling these boxes at a guinea when ordinary packed apples are selling at about $4 the barrel.

Among the other contributions to the display last week, deserving of special mention, were: Some excellent Ben Davis, Baldwins, and Spys sent in by W. H. Chaplin, Newcastle; some beautiful Pewaukees contributed by Geo. L. Bolster, Orillia; Kentish Fillbaskets, forwarded by R. L. Huggard, Whitby (one of these seemed almost large enough to fill a basket itself); some large, well colored, and perfectly formed Kings sent by James McGregor, Whitby; fine specimens of Ben Davis and Baldwins from the orchard of James Bell, Whitby; some St. Lawrence sent in by Harry Dempsey, rivalled the blush of a maiden, and Wolf Rivers that were worthy mates of Mr. Huggard's Fillbaskets; while J. E. Hambly of Cedar Springs contributed the finest quinces seen in any part of the Horticultural building last week.

Besides all this stock, a lot of the cold storage apples were still on exhibition, some of last year's Ben Davis, after an exposure out of cold storage for a month, being still as bright and attractive in appearance as this year's fruit.

Finally, there were shown a collection of sweet potatoes grown by James Titterington, St. Catharines. These sweet potatoes, with the peanuts previously referred to, prove that Ontario, besides producing the finest of Northern apples, can equal the Southern States in at least some products of a semi-tropical nature.

With the help of those fruit-growers who came to his assistance from different parts of the Province, Superintendent Bunting was able to put up a display which puts Ontario ahead of any State which exhibited at Buffalo with the single exception of New York. New York obtained 42 gold, 47 silver, and 103 bronze medals, and 173 honorable mentions, or a total of 365, as compared with 19 gold, 33 silver, and 35 bronze medals, and 85 honorable mentions for Ontario.

While Ontario obtained 19 gold medals, no State, outside of New York, secured more than 12 of this class: while we obtained 33 silver medals, the best of the others, outside of New York, secured 11; in bronze medals we got 35, only three States getting a higher number. In honorable mention we were led by but one State, viz., New York.

This can be put in an even more striking form. Ontario took 19 gold medals, as compared with 25 taken by the three States of Illinois, Michigan, and Missouri. In silver medals we took 33 to 17 of the same class of medals by these three States. In bronze we had 35 to 120, and in honorable mention 85 to 46. Moreover the three States named were on the grounds all the time, and occupied four times as much space as Ontario, while each one spent many times as much money on their exhibit and help as Ontario spent.

The next comparison is with six good States—Florida, Delaware, Maine, Wisconsin, Nebraska, and New Jersey. All told, these captured exactly the same number of gold medals as Ontario alone secured. In silver medals we outnumbered their combined winnings by nearly two to one. In bronze medals we won more than half the number won by the six, and in honorable mentions we won double the number that they did.

THE EVOLUTION OF A LOCAL HORTICULTURAL SOCIETY—II.

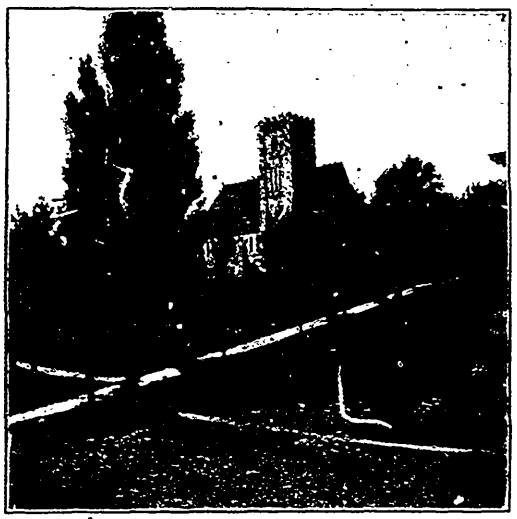


FIG. 2189. ST. JOHN'S CHURCH.

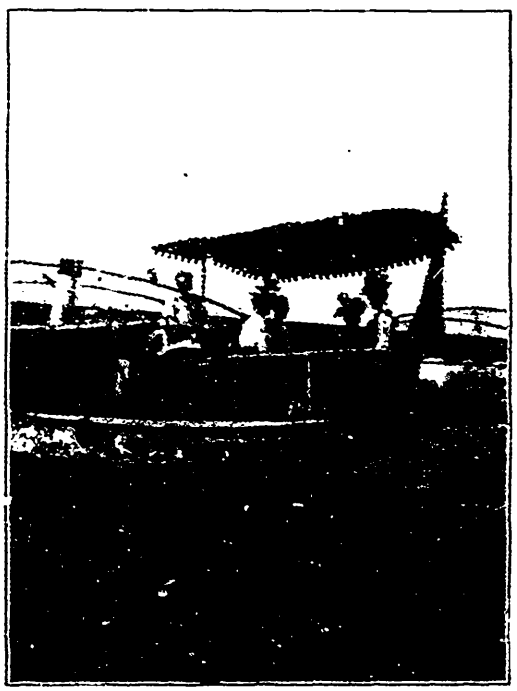


FIG. 2190. ON THE GRAND RIVER.

CAYUGA is agreeably situated on the Grand River in the centre of its County, and although it is not of very much importance commercially, still it is backed by a thickly populated agricultural district of much vigor and wealth. La Salle was first struck with the beauty of the Grand River and in our own time Goldwin Smith placed the picturesque beauty of the Grand River as first of its kind in Ontario, that of the Blue Mountains and the Thousand Islands second and third respectively. Cayuga nestles in pastoral loveliness in the midst of the only hills of a flat country that extends many miles in length.

FIG. 2191. THE CITY HALL

The aim of our Society is, in some measure, to restore to Cayuga its ancient heritage of beauty, to make it clean and wholesome in the hope that as it grows it will in time, architecturally, bespeak the mental health, power, pleasure and elevation that order and thought produce.

Of course we look for and seek help from

FIG. 2192. RESIDENCE OF H. MUSSEN.

every one on all sides; it is stated that at our station, now enveloped in darkness at night and mud in the daytime, the local superintendent is thinking of uniting with us and making a park in the station grounds, planting trees, adding gardens and placing out recreation benches.

At our Court House the good work is proceeding, the southern entrance to the grounds is just being re-modelled, pointing to additional handsome drives, new flower beds, cement walks, while an ornamental hedge has been added. The Anglican Stone Church, the crowning life work of the Rev. John Francis, B. D., ere he retired to a well earned superannuation, stands on large grounds adjoining the Court House park. Our society has caused these grounds to be terraced and fittingly laid out in magnificent proportions, in keeping with the beauty of the building.

The town park has been levelled in part, sodded, while double tennis courts have been added on each side of the band stand.

Privately, too, our local enthusiasts have all contributed their quota to the good work. There are still many difficulties to overcome. Dirt triumphs in many streets, many people still love to make a barn yard of the road in front of their dwellings. In many quarters paint is unknown, but our work is telling, and if we accomplish but a part of what we hope for each year, the reign of filth, disorder, smells and bad roads, will give way to order and beauty, so that some day Cayuga, when the inevitable trolley line from the outside world seeks her, will not be found wanting.

Cayuga, Ont. A. K. GOODMAN.

FIG. 2193. A LOCAL HORTICULTURIST.

THE BRILLIANT GRAPE, a cross between Niagara and Delaware, is reported by the Rural New Yorker, as susceptible to rot. At Maplehurst it has not yet shown this tendency.

CANADIAN APPLES AT THE EXHIBITION. A NEW SUPPLY FOR GLASGOW.

GATTONSIDE HOUSE,
Melrose, Oct. 6, 1901.

SIR,—One of the advantages conferred upon the public by your International Exhibition is that it has shown us what other countries might send us if only proper communications with them were opened. Thus, whilst strolling round the Canadian Section last July, I came upon tables containing the most magnificent display of apples I ever witnessed. Entering into conversation with the gentleman in charge, he kindly explained to me the different varieties, and also allowed me to taste several, which I found to be excellent. The varieties he particularly recommended as first-rate eating apples were Alexander, Gloria Mundi, Holland pippin, Wealthy, Fameuse, Ben Davis, Mann, Spitzenburgh and Blenheim Orange. I was surprised to find that out of 50 varieties exhibited by Canada at your Exhibition, only three are as yet known in Britain. I was also struck by the fact that these apples were in excellent condition for eating in July, whilst Scottish fruiterers' supplies of American and Canadian apples finished in May.

Having a very influential friend in Toronto I wrote to him of my visit to your Exhibition, and of my discovering there 47 splendid varieties of Canadian apples as yet unimported into Britain. I gently chid him for keeping all the best Canadian apples to himself, and summoned him, as a loyal son of the empire, to give us at least, fair trade in apples, and to induce Canada to send us every variety of apple grown in the Dominion. I also pointed out that our supply of Canadian and American apples closed in May, whereas I was eating capital Canadian apples in Glasgow Exhibition in July.

My friend took my criticism so much to heart, and has so great a love both for his Scotland and for Canada, that he placed himself, without delay, in communication with one of the leading officials connected with the apple-growing industry in Canada: and I have now the pleasure of transcribing pro bono publico the letter which that official wrote to my friend in Toronto:—

"Ontario, September 20, 1901.—Dear Sir,—I have your letter of the 18th inst., inquiring why those magnificent Canadian apples are not placed for sale in Glasgow. I think I may reply that the probability is that these apples will in a short time be regularly shipped from here to Glasgow. Last year was the first season when our cold storage accommodation on shipboard was of such satisfactory character that we were able to send forward our best fruits in safety to the old country. By the ordinary methods of carriage, our fruits were frequently ruined before they arrived in the old country, and of course, could not be held any time afterwards. Last year I took advantage of the improved arrangements, and put up for the Dominion Government nearly 200 cases of apples for Glasgow Exhibition. These were held in Montreal in cold storage until the month of May, after which they were forwarded in cold storage compartments to Glasgow, and brought upon the tables from time to time as they were required. I am informed by the commissioner in charge that he could have sold large quantities of these apples in July and August at high prices to the Glasgow people. I have no doubt that an excellent trade will soon be developed in this direction."—I am, &c.—*Ralph Richardson, in Glasgow Herald.*

A NOVA SCOTIA FRUIT HOUSE.

THE following description of a Nova Scotia apple storage house is furnished me by my friend, Prof. F. C. Sears, director of the horticultural school at Wolfville. He says that apple warehouses are each year becoming more common in the great apple district of Nova Scotia, the Annapolis valley. They are built either by large speculators who deal extensively in apples, by English commission firms for the accommodation of their patrons, or by co-operative associations of the growers themselves, and are used either for the permanent storage of fruit or for temporary storing of apples as they are brought from the farm, and until they can be forwarded by rail to Halifax, and there loaded on steamers for England. Fig. 2194 shows one of several which were built in 1899. It is 85 feet long by 20 feet wide, and has a capacity of about 4000 bbls., with loading accommodations for three cars at one time along the side.

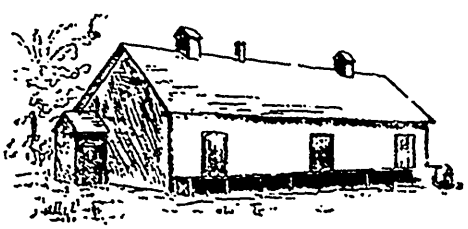


FIG. 2194. PERSPECTIVE OF NOVA SCOTIA HOUSE.

The building rests on a stone and brick cellar wall 8 feet deep, and the superstructure has walls 10 feet high. The walls are covered, on the outside of the studding, with two courses of inch boards, with building paper between, and this again is covered with paper, with shingles on the outside. Inside, the walls are first lathed and plastered with selenite and lime mortar. Then inch strapping is nailed against the studding, and the whole is covered with 1-in tongued and grooved spruce sheathing. The ceiling is covered with the same kind of sheathing, with building paper laid lengthwise of the joists between them and the sheathing. The upper floor is also laid double, with paper between, thus protecting the body of the building from frost from above.

The window and door frames are made with double casings buried in the covering in such a manner as to preclude the possibility of draft or frost, as seen in Fig. 2195. The windows have double sashes, and are provided with storm shutters for protection against heat as well as cold. The doors are also double, one swinging outward and the other inward, and fitting closely into beveled jambs. These doors are built on 2-in pine frames, with 1-in tongue and grooved sheathing on each side of frame, and paper between.

There are three hatchways in the lower floor, provided with gratings, or tight hatches if required. The ventilators extend from the ceiling to the roof, and are provided with slides to close when necessary. The cellar has also double windows and 4-in ventilator tubes in the sides. Both the cellar and the main floor of the building are proof against frost in the coldest weather, and altogether this warehouse is admirably adapted to the purpose for which it was built, and has proved invaluable to shippers.

*From advance sheets of Prof. F. A. Waugh's book on "Fruit Harvesting, Storing, Marketing."

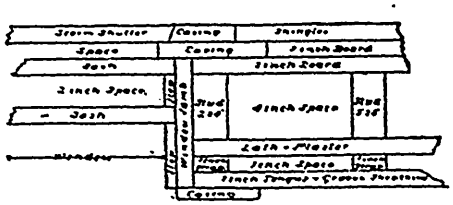


FIG. 2195. SECTION THROUGH WALL AND WINDOW.

REMOVING TREES—"GRUBBING" THE BEST AND CHEAPEST WAY—HOW TO DO IT.

SOME years ago an effective contrivance was patented for pulling small trees by horse-power. We think the machine is not now manufactured, and in any case the common method of "grubbing" is found to be cheapest and most satisfactory, says the Country Gentleman. The accompanying diagrams will help to explain the method most commonly in vogue. The writer has grubbed many acres of land similar to that described by the method hereinafter recommended, and therefore is able to speak about it intelligently.

Provide a good heavy yoke of oxen—horses or mules can be used, but they are not entirely satisfactory. Two log chains seven to ten feet each, a driver and a grubber will be required. If the tree is somewhat large, the grubber cuts off one or more of the roots.

The oxen are started and the operator readily sees where the roots rise on the opposite side. While they are under strain one quick, well directed blow with the sharp end of the grubbing hoe will sever the root. The smaller roots will be dragged out. If the tree should be tap-rooted, a little earth may have be to removed, and as the tree is on a strain it is severed by means of an axe or the hoe.

FIG. 2195.

The oxen should be driven at a sharp angle with the outer border of the wood. As one tree is removed another is hooked, and so on until the end of the wood is reached, when a reverse operation takes place. This is to obviate the necessity of backing the oxen and of removing the tree after it is pulled to a distance sufficient to allow the tree to be pulled down at right angles to the border of the wood.

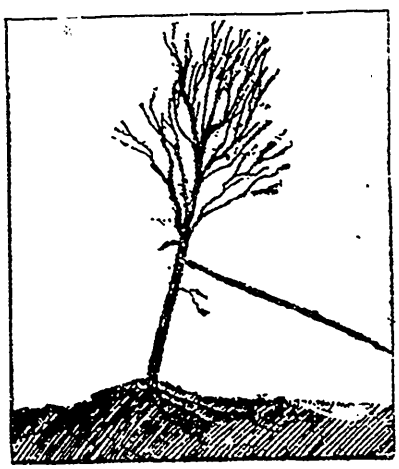


FIG. 2196.

It is readily seen that if the oxen are driven in a direction nearly parallel with the border of the wood but a narrow place will have to be kept clear.

The grubbing hoe should be made of the best of steel, well tempered, and be kept sharp by grinding once a day.

THE WIND AS A DISTRIBUTOR OF POLLEN.

IT HAS been said that anything can be proved by statistics. The proof seems conclusive, for figures cannot be disputed. In a similar way, all sorts of things are proved by experiments. The trouble is not with the experiments, but with the conclusions drawn from them.

The above reflections were caused by reading an account of some experiments recently made by an eminent eastern horti-

culturist, Prof. Waugh. The purpose of one experiment was to demonstrate the necessity of cross-fertilization in the pollenation of apples. Clusters of buds were covered with paper sacks, which were not removed until the blooms had fallen. Out of 2,586 blossoms covered all failed to set fruit except three. Prof. Waugh regards this as conclusive proof that a blossom must be fertilized with the pollen from a blossom of another variety before it will bear fruit.

But were there not other things to prevent the covered blossoms from setting fruit besides lack of pollen from another variety? Doubtless the partial exclusion of light, heat and air by the paper bags had something to do with it. Possibly more blossoms would have been fertilized had the pollen from other trees of the same variety been permitted to touch them. No two trees are exactly alike and cross-fertilization between two trees of the same variety may produce better results than where a single tree is compelled to fertilize itself, as where the blossoms are covered with paper sacks.

These suggestions are offered as affording a possible explanation of the result of the experiment. Prof. Waugh would have us believe that the experiment proves that self-fertilization is practically impossible with apple trees and therefore it is unsafe to plant large blocks of one variety. The fact that large blocks of one variety are planted and bear heavy crops of fruit proves that this is a wrong conclusion. However we believe it is better to mix varieties, though not absolutely necessary.

Another experiment was made for the purpose of ascertaining to what extent pollen is carried from one tree to another by the wind. Small slips of glass such as are used in microscopes were coated with vaseline and lampback and placed near the plum trees during the blooming season and left in position twenty-four hours. One slip was placed north of the tree, the wind being in the north, and did not catch any pollen. Of course not. How could the wind carry pollen against itself? Another slip was placed east of one tree and west of another and did not catch any pollen. Wind should not be expected to carry pollen at right angles to its course. Another slip was placed south of a tree in line with the wind and another in the midst of several trees. One slip caught seven pollen grains and pollen masses and the other twenty-five. This certainly proves that the wind is an important carrier and distributer of pollen: yet Prof. Waugh says that it proves that the wind is very inefficient and plays no consequential part in the pollination of fruits.—*O. H. Barnhill in 20th Century Farmer.*

COMING EVENTS.

Entomological Society of Ontario at London, November 13 and 14; secretary, W. E. Saunders, London.

Ontario Fruit Growers' Association at Cobourg, December 4 to 6; secretary, L. Woolverton, Grimsby.

Ontario Agricultural and Experimental Union, at Guelph, December 9 and 10; secretary, C. A. Zavitz, Guelph.

Ontario Provincial Winter Fair, at Guelph, December 10 to 13; secretary, A. P. Westervelt, Toronto.

Western Ontario Poultry Show at Guelph, December 10 to 13; secretary, A P. Westervelt..

Eastern Ontario Dairy Association at Whitby, January 8 to 10; secretary, R. G. Murphy, Elgin.

Western Ontario Association (place not fixed), January 14 and 15; secretary, George Hately, Brantford.

Eastern Ontario Poultry Show, Ottawa, Feb. 12; secretary, A. P. Westervest, Toronto.

Eastern Ontario Auction Sale of Pure-bred Stock at Ottawa, February 12th; secretary, A. P. Westervelt,

Maritime Winter Fair at Amherst, N.S., Dec. 17 to 19; secretary, W. W. Hubbard, Halifax, N.S.

Ontario Beekeepers' Association at Woodstock, December 3 to 5; secretary, W. Couse, Streetsville.

HOW FAR NORTH CAN THE APPLE BE GROWN.

IN the spring of the year 1855 a Mr. Hubbard, I think his name was, had a nursery near the town of Guelph. In a conversation with him he made the statement to me that he was so satisfied that the County of Wellington was not and never would be adapted for growing apples, that he had concluded to sell off his stock for what it would bring and go out of the business.

Now we can say that Mr. Hubbard was mistaken, for the apple grows all right in the County of Wellington, and much further north.

About the year 1865, Peter Henderson, of New York, in an address I think at Rochester in answer to the question, said certainly not beyond the limit of where the beech is grown. Now at this date we know Peter Henderson was wrong; we are here in St. Joseph's Island beyond the limit of the beech, and still we find the apple growing, I may say to perfection, or as near as insect pests, rust, etc. will let it.

Several years later a member of the Cabinet, in the town of Fergus, in course of his speech made the following assertion, that Owen Sound was the extreme point north where a man could live and draw his substance from the soil. Some one of the audience called out, "Won't Peaches grow up there?" "No," was the reply, "if you can grow potatoes it will be as much as you can do." Now we know that if he was right about the peaches he was wrong about everything else.

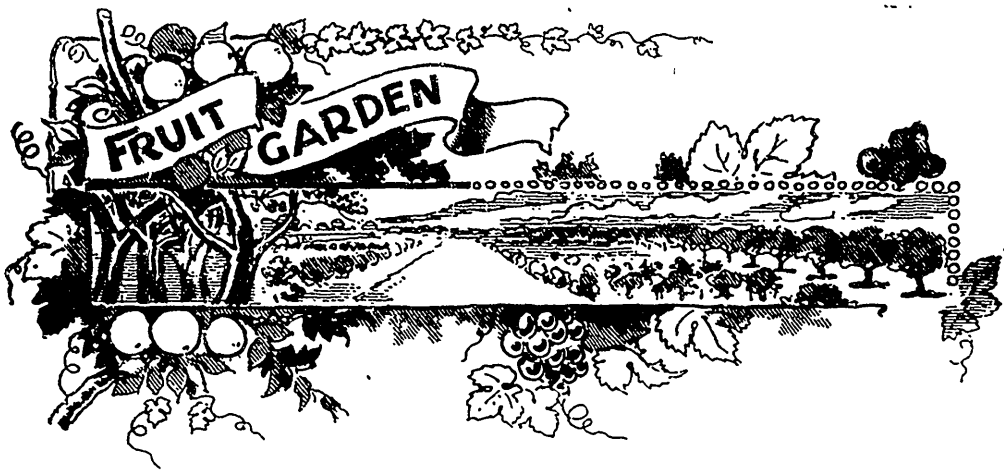
The first and greatest mistake I have made, and I may say we have all made, was getting it into our heads that we were too far north to grow fruit, and if we bought a dozen apple trees it was to get the fruit tree agent out of our home, for we never expected them to grow; we might dig a hole and put them in but that was the last of them.

Now in 1901 we know a good deal better than that; we know that they will grow if properly taken care of, and that the percentage of failure is as low as in what is usually supposed to be more favoured districts.

A very few years ago if any one had asked me if, as a commercial venture, it would be wise to plant a few acres of apples, I would undoubtedly have said no, I did think we could grow a few for our own use of some very hardy varieties but nothing more; but more interest began to be manifested in fruit culture, and this year when you people in eastern Ontario are lamenting your short crop of apples and holding them up for a big price, we have a splendid crop, and of course we are taking advantage of your scarcity and raising the price. I knew of two instances where outsiders have come in and bought out the whole crop.

Now we are by no means at the outside of the fruit belt here yet, for near Green Lake, about latitude 46 may be seen or was a year or two ago, two aged apple trees of an inferior variety presumably seedlings; and beyond the height of land on the slope toward James Bay, wild currants and strawberries may be found, while I have been told at Batchawing Bay on the north shore of Lake Superior about latitude 47, apples have been planted a few years ago, and so far have lived through the winters and made satisfactory growth.

Richard's Landing. CHAS. YOUNG.
St. Joseph's Island.



FIRST LESSON IN FRUIT GROWING—I.

IN the general round of his work, the fruit-grower has to deal largely with trees, vines, bushes or plants. That he may at all times care for and manage these intelligently, he must know something of their structure, and of the functions which the different parts of the tree or plant have to perform.

Roughly speaking, we may say that a growing tree is made up of roots, trunk, branches, buds and leaves, and that under certain conditions it produces flowers and fruit; but for our purpose it is necessary to study these parts more closely that we may notice the various forms which they present, and if possible learn the objects which they fulfill in the economy of tree growth.

THE ROOT.

Where the root joins the trunk, just at or about the surface of the ground, is what is known as the *collar*. This is not a fixed point, as its position may be raised in young trees by banking earth about the trunk, new roots being formed above the older collar.

The first root formed is the *tap root*, which usually goes straight downwards from the collar. In some trees, particularly the nut bearing trees, such as the walnut, hickory and oak, the tap root becomes very large and strong. In fruit and ornamental trees, which are taken up and transplanted when quite young, this downward growth of tap root is checked, and development of lateral roots takes place.

The *lateral roots* may be said to be branches from the tap root. They grow more or less horizontally, and usually spread a good deal farther in the ground than the branches of the tree spread in the air above them.

The tap and lateral roots are the largest roots, but associated with them is usually a greater number of smaller thread-like roots known as *rootlets* or *root fibres*. In some kinds of trees they are much more freely produced than in others. They are most abundant in trees having a thick, branchy top. The quince and peach has usually lots of fibrous roots, while in the apple and pear the laterals are more or less bare of root fibres. The more frequently a tree is transplanted, the more fibrous its roots become.

To complete the root system, there is still another class of roots known as *root-hairs*. These are very delicate, hair-like roots, so small that they can hardly be seen without

the aid of a magnifying glass. They are so delicate that they are easily destroyed by bruising or by slight exposure to the sun or wind. In the ordinary practice of transplanting, the greater part of the root-hairs are broken off and destroyed, but if the soil conditions are favorable they are rapidly reproduced.

THE FUNCTIONS OF ROOTS.

One of the self-evident functions of roots is to anchor or support the tree in the ground. To this end the development of the roots of a tree correspond very closely with that of the top above ground. If the top is low and spreading, the roots will be shallow and spreading. If the top is high, exposing it to strong winds, the roots naturally grow deeper to anchor it more firmly in the soil.

Another function of the roots is to dissolve inorganic elements in the soil, making them available as plant food. This solvent power of the roots is due to the acid juice contained in the root-hairs, which acts chemically upon the mineral plant food in the soil, gradually dissolving it so that it may enter into the growth of the tree.

In addition to rendering plant food available, the roots absorb soil moisture containing this plant food in solution. The absorption of soil moisture takes place mostly in the root-hairs and small rootlets; the older roots, covered with a hard thick bark absorb very little, if any at all.

From this brief study of the nature and functions of roots, it will be seen that while the older and larger roots may be most important in anchoring the tree in the soil, yet the newer and smaller roots and root-hairs, which are usually most remote from the trunk, are most attractive in nourishing the tree.

PRACTICAL CONCLUSIONS.

In this connection a few practical points may be emphasized, which should be remembered in the management of trees singly or in orchards:

1. In transplanting young trees, the better the root system is preserved uninjured, and the more favorable the soil conditions for growth, the more readily the root-hairs are reproduced, and the roots establish themselves in their new position.

2. In watering newly planted, or even established trees, if the water is to be of any use, it must be applied so that it will reach the smallest roots.

3. Whenever a fertilizer of any kind is applied for the benefit of the tree, it should not be banked around the tree trunk as is often done, but should be spread evenly over the ground out as far as the roots extend. The rain water passing through the soil will gradually wash it down to where the root-hairs can get at it.

4. As water is the vehicle by which all plant food is taken in by the roots, it is important that the soil be so managed as to conserve soil moisture sufficient to supply the needs of the tree.

O. A. C., Guelph. PROF. A. H. HUTT.

A FINE RECORD.—Mr. W. A. McKinnon, Chief of the Fruit Division, Department of Agriculture, reports as follows:

"The 'Marina,' on her last trip, carried a lot of Bartlett and other pears, and they were reported landed in good condition. The thermograph record shows that the fruit was carried at an average temperature of 39 degrees, with a variation of not more than two degrees during eleven days' run. Mr. Robt. Logan, Chief Engineer of the 'Marina," deserves the gratitude of the fruit trade for this performance, which also reflects great credit on the Donaldson Line."

DWARF PEARS.

DEAR SIR,—Would an acre of dwarf trees bear as much fruit as an acre of standard trees? (I understand that dwarf trees should be planted ten feet (10) apart, and standard, about thirty five (35) feet, and is the fruit of the dwarf tree, equal to standard in size and quality? An answer through your journal, (If you have such data at hand) would oblige.

"AN AMATEUR."

For the first twenty or thirty years probably the most fruit per acre would be produced by the dwarf trees, because they begin bearing so early; but afterward the advantage would annually become greater in favor of the standards.

In quality, the fruit grown on dwarfs is frequently larger and finer than when grown as standards; some varieties indeed being scarcely worth growing except as dwarfs, as for example the Duchess and the Anjou. In size the fruit grown on the dwarf trees is much the larger of the two—the checking of the wood growth having that effect in the case of the dwarf.

In planting a dwarf pear orchard it is wise to set the trees a little deeper than one would standards, because the quince root grows slower than the pear top, which may in time break off, unless set deep enough to throw out roots of its own.

Pruning is most important, for prolonging the tip of the dwarf pear, for if allowed to grow tall and spreading, it will be early blown over by the winds, and the fruit will not grow to as large a size as if kept down to the pyramidal form.

To bring this about, the trees should be pruned to a single stem the first year, and this must be cut back at the end of the season or before growth begins the following spring, in order to develop strong laterals. How low to cut back depends upon the vigor of the stalk and can only be learned by experience, but it is necessary to get strong lateral branches about 10 or 12 inches from the ground. From year to year the pyramidal form should be kept in mind, shortening the leader and all side branches to an imaginary line, drawn from the outmost base to the top of the leader. After about eight years growth, the dwarf tree should have attained as large a size as is desirable, and therefore should be cut back, severely enough to continue it in about the same shape and form, the further pruning being directed to the shortening and thinning out of the fruit spurs.

With such attention as this, a dwarf pear orchard, if of the proper varieties, will prove an object of especial pride to the owner.

CROWN GRAFTING.

SOME time since our friend Parker, of Nova Scotia, criticised the method of renewing an orchard, which we described, because it is so simple that any farmer, without special tools, or even grafting wax, can succeed in its performance. We did not advise it as the best way, but simply as a method which might serve in many cases where skill was lacking to do cleft grafting. The following extract from Garden and Field, of Melbourne, Australia, is in the same line, and shows we are not alone in this advice:

"Reworking old trees can be done in nearly as many ways as kissing a girl. The latter has nothing to do with the subject, but a reference to so serious a matter will indicate how much in earnest I am when I say to every fruit grower, cut down and rework every tree which is not of a first-class sort, or which does not pay to grow, and do it soon by crown grafting. Now, I am quite competent to advise on this matter, for I have read all about it like the experts do, and if that be not enough to establish my authority to an unbelieving world, I may say I have taught it just as a passionate parson has self-control; and if that be not enough, like George Washington, I must say aloud, I have have done it myself. Joking aside, I have never had a failure on either stone or pip trees, and I have done the work from the beginning of August on the almond, to the end of October on the apricot. I think it is best to cut old trees off

clearly a foot from the ground, and smooth off the surface. Then insert back or crown grafts 1 in. apart all round. Tie a tight band of binder twine several thicknesses round, and apply grafting wax all round and over. If the operation be done as the tree is beginning to show leaf and the scions are dormant, nearly all will take, and the stem being protected from the sun by a bit of canvas, the bark will heal over the edges. The object of putting in so many grafts is to keep the bark lively all round, and to provide as many active growing buds as possible in place of the former tree top. I am sure that if a big tree has to be cut down this is the best way to reduce the shock as much as possible. The following diagram after Balat, shows how the crown graft is put in. It will be seen that the wood is in no way damaged. The graft, Fig. 1234, is shown with a shoulder; but I do not trouble about cutting one, and merely cut the scion with a long sloping cut, 1½ inches long. The bark in Fig. 1234, as shown, is lifted too much.

Fig. 3, shows the grafts inserted and the stem bandaged. It will be noted that the bark has been displaced but very little.

The following is the method to be adopted. The tree is to be first cut down, say a foot above the place intended for the grafting. When ready to graft, a clean saw cut is made at the right place, and the surface smoothed with a sharp knife or spokeshave, especially all round the sap wood and bark.

To prepare for the scions a vertical slit is made through the bark about an inch in length, then

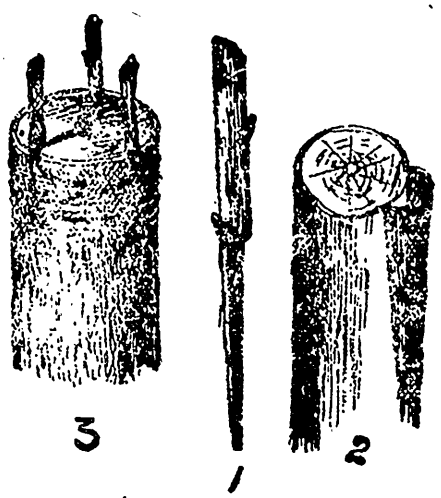


FIG. 2134.

with the handle of a budding knife or a piece of hard wood sharpened to wedge shape and smoothed, the bark is lifted from the sap wood enough to allow of the scion being inserted.

The scion having been prepared as shown, it is carefully slipped down in the place prepared for it, bound round, waxed, labelled, and the work is done."

FRUITS FOR THIRST.

CHEMICAL analysis would assign practically no nutritive value to the juicy fruits, for they consist of little more than a cellulose envelope containing a solution of sugar, the amount varying from 17 per cent., as with grapes, to about 1. 4 per cent., as with lemons. The amount of water in fruit is considerable. In watermelons it is no less than 95 per cent., in grapes 80 per cent., in oranges 86 per cent., in lemons 90 per cent., in peaches 88 per cent., in apples 82 per cent., in pears 85 per cent., in plums 80 per cent., in nectarines 83 per cent., and in strawberries 90 per cent., not a fruit in the whole category containing less than 80 per cent. The irresistible conclusion, considering these facts, is that fruit plays an important role in the diet as a thirst quencher. Certainly when fruits are freely represented in the diet less fluid requires to be consumed, and fruit would appear to be endowed with a subtle inimitable flavor which is ample inducement to imbibe fluid in this most wholesome form.

Moreover, the juice of fresh-cut fruit is perfectly free from microbes, is as sterile as freshly clean drawn milk, and the fruit acids tend to inhibit the power of those disease-producing bacteria which flourish in neutral or alkaline media.

DETECTING SAN JOSE SCALE ON FRUIT.

WHEN only a few insects are present on a tree the San Jose scale is not easily detected. If there is fruit on the tree, particularly apple and pear, the pest may be often seen long distances. On some varieties, especially light colored fruits, the characteristic purplish rings with the scales in the center are very conspicuous. The marking varies somewhat, but is not liable to be overlooked. On pear and apple it is very pronounced and fruit on badly infested trees is ofted mottled. The scale attaches itself to any part of the fruit; but is more abundant on the calyx end. At times there is a depression where the scale is attached, making the fruit very irregular if badly infested. The accompanying outline shows the scale markings on an apple recently received.

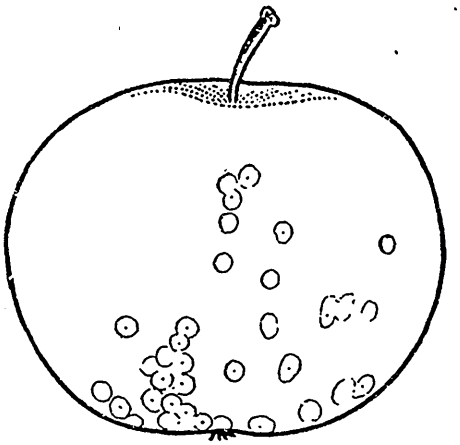


FIG. 2198.

It is a peculiar fact that the scale seeks the fruit where there are only a few insects on a tree. When picking fruit, trees from which suspicious specimens are taken should marked. They can be sprayed later and watched. I have known many cases where the scale has been first detected in an orchard on the fruit. The same characteristic purple spot is seen upon the bark of many young trees, and upon the newer growth of older trees. Some apples and pears are often attacked by a fungous disease, producing a circular reddish or purple marking similar to the scale spot. Care should be taken not to mistake this for scale. The presence of the scale in the center of the circle can be easily detected with a small pocket lens. It is safe to be alert and on guard all the time. —*Rural New Yorker.*

PRUNING THE CHERRY.

Could you give us in an early number a short article on pruning the cherry; there seems to be a great difference of opinion. Some advise heavy cutting out the centre of the tree top when young, others again say never put a knife in the top of a cherry.

Richard's Lancing. CHAS. YOUNG.

The cherry tree is more susceptible of injury by injudicious cutting than most fruit trees. Large wounds do not readily heal; instead they often cause decay into the heart and early loss of vigor to the whole tree. Bark wounds even will cause the oozing of the gum, and often the death of the bark, leaving the wood exposed to the action of the borers and weather.

Judicious pruning, however, of the cherry tree is just as important as with any other tree.

THE SWEET CHERRY CLASS

does not require much pruning; where the tendency is to throw up a long leader without many laterals it should be cut back to induce their growth, and these laterals will need similar treatment. The ideal form of the tree should be kept

in mind, and pruning directed so as to encourage it. These sweet cherry trees are naturally pyramidal in form, and this habit must of course be encouraged. Farther than this, the only pruning required will be the removal of branches that cross, and those that are dead.

THE SOUR CHERRY CLASS

on the other hand, form round bushy heads, and during the first three or four years the pruning should be directed toward securing this form. At time of planting the three or four top branches should be shortened to within four or five buds of their base, and four or five shoots encouraged to form the frame-work of the head. These must again be shortened the next year, and such secondary branches allowed to grow as will fill up the spaces and give symmetry. In three or four years a permanent form will have been secured, and it will only be necessary to remove superfluous growth from year to year.

The late Patrick Barry gave the following directions for

PRUNING THE CHERRY AS A PYRAMID.

The leader or stem is cut back to within six, eight or ten buds of the branches. Those having no branches are cut back to within six or eight buds of the stock, and this is the first pruning.

When the shoots have grown a couple of inches in length, such as are intended for permanent branches are chosen, and the others are pinched in the same manner as recommended for pears and apples. Such as acquire more vigor than is consistent with their position, must be checked. It frequently happens that, unless the leader has been cut back close, only three or four shoots will be produced at the extremity, leaving a vacant space below. This can be remedied in most cases by pinching the shoots around the leader when they have grown about an inch. In some cases it may be necessary even to check the leader to force the lower buds into growth. This is a point of considerable importance in conducting a pyramid, and should never be lost sight of.

PRUNING.—Probably one of the best tests as to a good knowledge of practical gardening lies in the manner in which the pruning knife is handled, for the deplorable effects of a lack of this knowledge are seen everywhere. The chief success in fruit-culture comes from the knowledge and the practice of judicious pruning. One has but to look at an ordinary vineyard, and the result of some good gardener's growth of grapes under glass, to see the wide difference between ignorance and knowledge. The good grape-grower under glass will use the pruning-knife so judiciously that the plants will be healthy and productive for a hundred years, bearing fruit as freely and as vigorously from near the roots as at the top of the vine. The grower on the garden trellis, or on the side of a barn or building, finds his vines no good at the end of a few years. The variety he pronounces no good, and he rushes after every new kind to correct the results of his own folly.

One may travel through the length and breadth of the land and not find a case of sound pruning, and, at the same time, notice the weakness and decay in orchards everywhere,—all due to ignorance of pruning. There will be seen many cases where the owners understood this much: that pruning was a necessary part of a good gardening education—but not knowing anything of causes and results, they have rather hastened than arrested the destruction of their trees.—*Meehan's Monthly.*

TREATMENT OF THE STRAWBERRY FIELD AFTER PLOWING AND BEFORE RE-SETTING.

THERE are various methods of treating an old strawberry bed to get the soil in good condition for resetting it to strawberries, which requires not less than two years. When the strawberry bed becomes unprofitable it is plowed up, as soon as the crop is harvested. The straw is not burnt off unless it is so heavy as to hinder plowing. We usually mulch two-year-old beds also. The land is again plowed in the fall and seeded to wheat or oats the following spring. After the grain is harvested we apply manure at the rate of fifty loads to the acre. The land is then plowed immediately after the manure is spread. The next year corn is planted, without plowing. We go over twice with the cultivator and finish with the harrow. The ground is then in good condition for a crop of corn. In the fall when the corn is cleared off the ground, which we do as early as possible, we again plow, this time quite deep.

During winter we haul about eight loads of soft wood ashes to the acre, which is put all in one pile on this land, and covered with to keep from leaching. Only soft wood ashes are obtainable here, but any amount of it can be had at two neighboring creameries and one flouring mill. The object of hauling the ashes in winter, is because time is too valuable in spring when the ashes are to be used. The ashes are easily distributed over the field with one horse and a road scraper and afterwards spread with a shovel.

In the spring before planting time, the ashes are spread and the land gone over with the riding cultivator until it perfectly free from weeds.

Of course the corn stubble is now on the surface and must be removed, but it takes one man with a hand rake only half a day to clear one acre. After this is done, the land should be gone over once with the harrow. The land is then ready for marking and resetting of the strawberry field. — *Report Minn. Horticultural Society.*

APPLE STOREHOUSE.

MY house for storing fruit is one that was on the premises and not built for the purpose. But I find it quite convenient. It is a stone building 26x34 feet, with good walls 2 feet thick, well laid in mortar. To make it so I could hold fruit through the winter, I lined it inside with matched lumber, making an air space of about 10 inches between the wall and lining. It is a two-story house. I protect from cold by putting straw on upper floor about 4 feet thick when settled. It kept the fruit well. I make a fire in it only three or four times through the winter, on account of extreme cold.

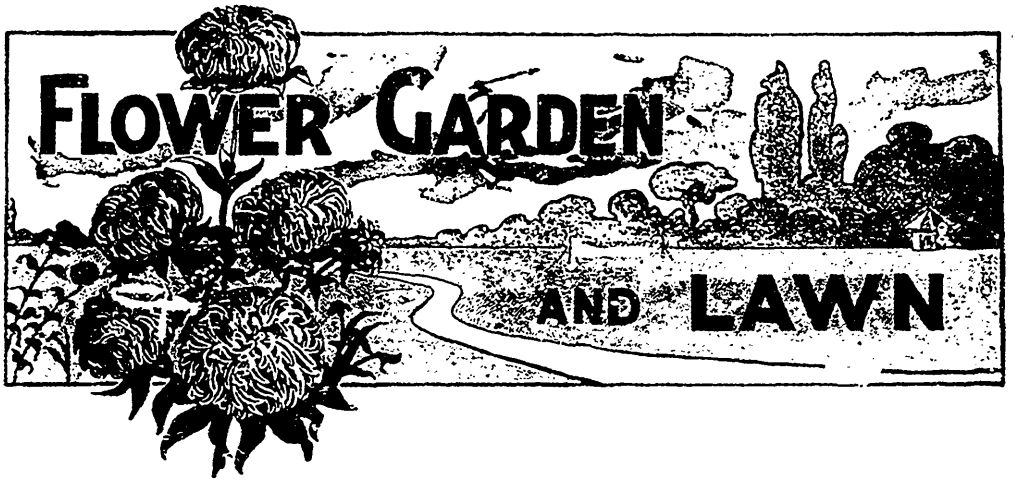
I could, with but little expense, make it good for cold storage by putting 8 or 10 12-inch galvanized iron pipes through the upper floor, letting them down 3 or 4 feet, and filling from above with crushed ice and cheap fertilizer salt. I have used it as it is, opening the doors nights to cool off and keeping it closed during the day, except when putting in more fruit. I pick and put in barrels in the orchard and store them open. In rainy weather I can sort and pack for market or cold storage, near market, by Nov. 15. I have seldom kept a crop over.—*H. H. Hill in American Agriculturist.*

USE OF CRUDE PETROLEUM IN ORCHARDS.

THE varying and sometimes disastrous results obtained from the use of refined petroleum on growing trees, as an insecticide, and especially against the San Jose scale, have led to the suspicion that the crude product might be less variable and drastic in its effects. But so far as it has been used it would appear that we yet have much to learn, before we can with safety, recommend the application of the crude product to the different varieties of fruit trees. That it is efficient in destroying the San Jose scale if it is brought in contact with this insect seems now quite probable. But the hundreds of dead trees that mark the areas where it has been indiscriminately used, point very clearly to the fact that great caution is necessary, and no one is, as yet, able to say just where safety comes and danger begins. Then too, when no permanent injury is apparent, as in the case of the seedling apples on the ground of the Ohio Agricultural Experiment Station, who can say that this unatural retardation may not, after the first application, prove to be a menace to the life or general vigor of the tree? It is well known that in nature these retardations sometimes occur, but nature seldom, if ever, covers the bark of a tree or shrub, and then only in part, with vegetable growths like lichens, and even these are known to be detrimental, a smooth, clean bark being always desirable. In the use of refined petroleum, one of the most perplexing phenomenon observed was the fact that, equally careful applications made by the same person, with the same grade of oil, would give almost opposite results. Hence recommendation of the refined product for general use has in many cases resulted disastrously and brought no little disrepute to the entomological fraternity of this country. The most that can now be said for the refined product is that a ten or twenty per cent mixture with water constitutes a fairly successful summer wash and destroys the young scale, thereby checking the increase and spread until applications of whale oil soap mixtures can be made.—*Prof. F. M. Webster, Ohio Experiment Station.*

OUR COBOURG MEETING.

AS we go to press we are more and more assured of a large and enthusiastic gathering. A large collection of Pan-American apples will be shown on the fruit table, many of them harvested in 1900. An interesting feature of the meeting will be the announcement of the names of those Canadians who were fortunate enough to win medals and diplomas for fruit at the Pan, and each one will receive a beautiful banneret, in proof of the honor conferred.



SEASONABLE HINTS FOR GREENHOUSE, GARDEN AND WINDOW.

GREENHOUSE.—Keep the temperature from ten to fifteen degrees lower at night than in the day time. The temperature, however, should never be allowed to go below 45° or above 65° at night, whilst in the day time a temperature of from 60° to 75° will suit a mixed collection of plants very well. Plants require rest at night, a slightly lower temperature assists materially in this respect. Over anxiety to keep out the frost at night is often the cause of a higher temperature being maintained at night than in the day time. This is injurious to plant life, as it induces a weak, spindled growth, that invites disease as well as a bountiful crop of insect pests.

When potting plants press the soil firmly around the roots of the plant without injuring them. Allowing the soil to remain quite loose around the roots is not conducive to quick root action and subsequent healthy top growth.

A moist atmosphere, induced by frequently sprinkling the floor of the greenhouse as well as syringing the foliage of the plants early in the day on fine sunny days, will prevent the ravages of red spider. Sprinkle the floors at least once a day regularly, and syringe once or twice a week.

Carnations, roses and fuchsias, are particularly liable to attacks of the minute but destructive little red spider. A moist atmosphere does not suit the red spider.

Water all newly potted plants once thoroughly, and withhold water until the soil shows signs of becoming dry again. If the plants wilt a little, shade them from the sun for a few days, and perhaps syringe the foliage, but do not keep the soil in the pots soddened with water, thinking it will revive the plants. Too much water given to newly potted plants before root action has well started, will often destroy them.

THE GARDEN.—Mould up the tender varieties of out-door roses before severe frost sets in. The earth should be thrown up around them so as to cover six or eight inches of the stem, and the mound patted firmly around so that it assumes a conical shape to pitch off any moisture from around the plant. A further covering of long

strawy manure later on will also be of benefit, especially if there is no snow to protect the plants.

Newly planted bulbs should have a mulching of strawy manure applied before hard frost sets in. In fact all newly planted trees or shrubs, as well as bulbs and perennial border plants, will be benefited by some light protective material if they are at all tender.

Lilies of all kinds planted out of doors should have a good mulching of manure in winter, more especially the Japanese varieties. L. candidum and L. tigrinum are hardier, and as a rule require little or no protection. A mulching however will benefit them, as it acts as a fertilizer as well as a protective material.

THE WINDOW.—Retain as moist an atmosphere as possible around and about the plants, and careful intelligent watering at the roots, are the principal features of window-garden work during the winter to attain success.

The following varieties of plants are amongst those that require only a very limited quantity of water during the winter, viz. : cactus of all kinds, agaves, aloes, hydrangeas and oleanders. Rex begonias require only occasional watering during the winter, and should never be syringed overhead, as the spiny rough construction of the surface of their leaves retains the moisture to such an extent as to rot and destroy the leaves. All summer-flowering begonias require comparative rest during winter. A limited supply of water induces partial rest in plant life. Callas, cyperus, cinerarias, cyclamen, genistas, and all growing plants must never be allowed to become dry at the roots at this season.

Holland and all spring flowering bulbs require plenty of water, after the bulbs have made a good supply of roots. Newly potted bulbs require to be watered thoroughly once when first potted. If given the proper conditions to make root in, viz. : a cool, moist, dark situation, they seldom require water until top growth commences and the bulbs have secured a good supply roots. Securing a good supply of roots before top growth commences is very necessary, if you wish the bulbs to produce the best flowers possible. After the top growth has well started bulbs should not be allowed to become dry at the roots.

Give liquid manure very sparingly to plants during the depth of winter. In February or early in March a little fertilizer may be given them to advantage.

Freesias require a fair supply of water, and must not be allowed to become dry when once top growth has well started.

Watch out closely for attacks of insect pests. A little weak tobacco water, or an application of some of the prepared insectitides sold by seedsmen, should be given plants every week or two during the winter. Give the application in a weaker form than is usually recommended. Weak applications, frequently applied, before the insects appear, will be far more beneficial as preventatives than heavy doses will be as a curer if left until the plants are infested with insects before it is applied.

Hamilton. W. HUNT.

FIG. 2200. ARUNDO DONEX, GROWN IN QUEEN VICTORIA, NIAGARA FALLS PARK.

(See page 518.)

FIG. 2199. A GROUP OF TROPICAL PLANTS IN QUEEN VICTORIA, NIAGARA FALLS PARK, DURING THE SUMMER OF 1901.

THE EULALIAS.

IN a late number of your journal you proposed securing for your members Rudbeckia purpurea. I tried to grow it at the Falls and failed. I blamed it to the plant being rather tender; if so here, then it would not give satisfaction in other parts of the province. How do others find it? It may be that the excessive moisture here does not suit it.

In place of Rudbeckia purpurea, I would recommend some of the Eulalias, of which there is a number of varieties, and I am sure all that went to the Pan American this summer could not fail to take notice of the beautiful bed of them there. In my estimation it was the best bed on the grounds, and it contained Eulalia zebrina; Eulalia nica; E. Japodica variegata, and E. geacillinia; Gynerium argentium or Pampas grass of South America: also Arundo donex, of which there is a variegated variety. (See Fig. 2200.) I inclose you a photograph of the green one if worthy of notice. The above bed was bordered by the beautiful Pennisetum ruppelianum, which is grown from seeds in the early spring, although they can be kept in a greenhouse and divided by the roots in the spring. There are other similar plants that could be added to this collection, such as the Bamboos—the common, the golden and the variegated—and even the sugar cane and many others. Again what is more beautiful than a few individual plants of the above standing or planted here and there on any lawn?

Niagara Falls. R. CAMERON,

HERBACEOUS PLANT NOTES.

THE fall planting of perennials should be attended to as soon as possible; delay until colder weather sets in is not advisable, because the plants may not then have time to form new roots and establish themselves firmly in their new quarters before hard frost stops their growth. Many of the hardiest and coarser growers may occasionally come out all right when planted late, but with the more delicate dwarf species we should always be most careful. When plants have not taken a firm foothold in the soil the frost will lift them, exposing the crowns and often a part of the roots. Mulching and shading the beds will act as a preventative against this evil and it is advisable to apply this mulch to all fall-planted stock, even to the early plantings.

Dividing into very small pieces should never be practised in fall. Rare things are better left alone until spring, when they may be divided into single eyes if necessary, with much more safety. All plants which form soft, thick, fleshy roots are more liable to decay over winter when mutilated by division; therefore, it is better to wait with this operation until next April or May.

Grasses like eulalias and erianthuses, do not usually take kindly to transplanting during the fall months; neither do the hybrid pyrethrums, especially when the clumps are to be divided. When plants have been specially prepared for fall planting, by dividing in spring or earlysummer, it is quite a different case. We then have small clumps, which in most instances can be taken up with a ball. Their roots are not mutilated by division and they quickly take a firm hold in the soil. With such young and vigorous material we run no risk of failure and are enabled to produce a fine show in a bed, the border or a rockery in the coming season.

Primroses, auriculas, campanulas, aubrietias, veronicas, helianthemums, aquilegias, silenes, lychnises, iberises, alyssums, hepaticas, lobelias, omphalodes, polemoniums, rudbeckias or arabises and a host of other things may he used to advantage for planting in beds by themselves or intermixed. Some of them can remain in their places for a number of years undisturbed; others, if so desired, may be removed after flowering to make room for other plants.

For refilling these vacancies we need not necessarily rely on bedding stock of other potted plants. Many of our later blooming hardy plants will bear removal after growth is considerably advanced if we are a liltle careful with them. I have successfully moved heleniums, phloxes, helianthuses, boltonias, cedronellas, lythrums, asters, rudbeckias, veronicas and others in July and August, while in full, vigorous growth. Two or three very liberal waterings assisted materially in the speedy recovery of the plants; the soft tips invariably stood erect by the next morning and remained in that position without any further attendance.

Of course all these plants were dug up carefully with a ball of earth, otherwise they surely would have suffered more or less, and where the plants have to be a long while out of the ground or transported to a distant point it is out of the question to refill beds in this manner, but in most places where perennials are grown in quantity such stock for this purpose is nearly always available.—*American Florist.*

FIG. 2200

SOME ATTRACTIVE CACTI—II.

IN the October issue, a few of the different families of Cacti were mentioned, with a very short description of some of the most attractive members in each, and in this article some other branches of the species will be taken up. First, there is the small family of Anhaloniums, consisting of some five varieties. Foremost among these is A. fissuratum, the "Living Rock." This great curiosity has more of the appearance of a finely carved piece of stone than of a living plant, the shell having a hard surface, and the bright, purplish flowers come as a surprise from such an unlikely looking quarter. This is an extremely curious and wonderful plant, and lives where sometimes no rain falls for two years. It will stand any amount of drought, but too much water, while the plant is dormant, will soon cause it to rot. It generally blooms soon after being started growing, when imported from its native soil, and given favorable conditions. Besides this one there is a smaller species, and much rarer, A. Sulcatum, which is a quite persistent bloomer, having pretty purple flowers. A. Prismaticum, grows larger than either of the others, and is of a different formation, the parts which stand for leaves being hard and smooth, tapering to a small point. The flowers are also very much larger and finer, being about two-and-a-half inches across, of a white shade. This is highly prized by all collectors, it being scarce even in its natural home. Two other varieties, A. Lewini, and A. Williamsii, are called "dumpling cactus," from their appearance. They are round, and composed of a fleshy substance, having a long turnip like root. They bloom very freely, the flowers being of a ligl.t rose color.

A family of Cacti, among which are some well-known and commonly grown sorts, as well as a very large number of beautiful

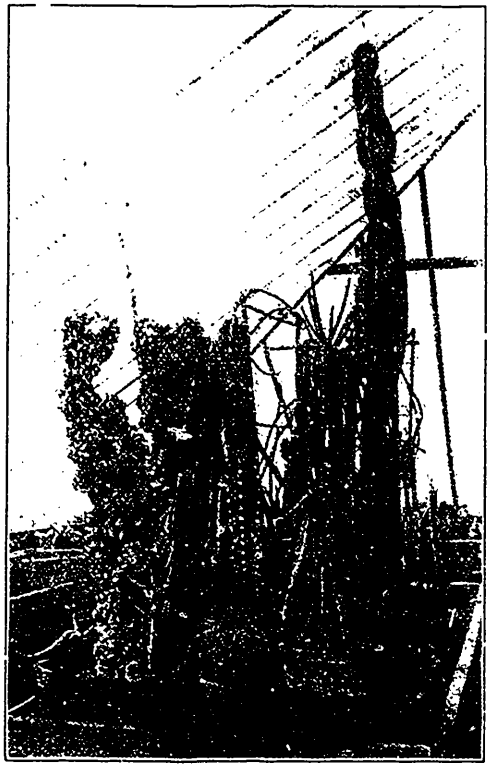


FIG. 2201. CEREI GROWN BY MR. CALLANDER.

sorts which are very seldom seen, is the Cereus, in its greatly varied style. This species comprises forms that differ very much in style of growth, from the slender C. flagelliformis, which grows in hanging baskets, and is called the "Rat-tail," to the immense C. giganteus, the giant of the Cactus family, which reaches the height of forty to fifty feet. There are so many attractive Cerei, that in a short general description, it is hard to tell which to describe. The best known, perhaps, next to the Rat-tail, is the C. grandiflorus, or Queen of Night. This is a slender climber, the young growth of which is quite handsome, but it is the flowers of this, and all the other climbing varieties, that are their special feature. These are indeed grand, and form a notable attraction wherever seen. Some of them are nearly a foot across, and very fragrant. Nearly all are white, though one or two are said to be pink. In Alston's greenhouses, Winnipeg, there is a large plant which blooms regularly, and a notice put in the paper that a flower is expected to open that night will bring hundreds of visitors to see it. There is a noted plant in California, which grows all over one side of the house of Mrs. Shepherd, Ventura-by-the-Sea. It is C. triangularis, and annually bears great numbers of enormous and beautiful flowers. Some of the stouter stems of these climbers being of very fast growth, are used for grafting other slower growers on, and this makes a very interesting study. Some very curious effects can be produced by this process, and the different varieties readily lend themselves to the work, and quickly unite and commence a rapid growth on the new stock. The favorite trial with amateurs is to take a well rooted and growing stock of C. Colubrinus two feet high or more, and graft on it two or three small pieces of the Rat-tail cactus. It is surprising how quickly this will form a head of long drooping stems, which also flower very freely when grafted. A fine specimen of this is shown in the front

FIG. 2202. ANHALONIUM.

of the group of tall cerei shown in the photo.

Another successful graft is to use a good strong stock of Pereskia, and on it graft an Epiphyllum or "Crab Cactus." This also, soon makes a fine specimen, and flowers better than on its own roots. Globular varieties grafted on a stright stem of Cereus are also very odd, and make a tremendous growth. It is in this way also that the Monstrosities are increased, as a smals piece will unite and soon made a large plant that is very valuable. A branching stem is often grafted with several different varieties, and the effect of these all growing on the same root is most peculiar. Indeed, grafting is the most interesting part of a Cacti collector's care of his plants, and it is very easily done if both scion and stock are in a good growing condition.

On the left of the cerei illustration will be seen a very curious form of Cereus Peruvianus which has no centre of growth, but is a solid mass of crowns, and growth starts anywhere, making the stem of all kinds of grotesque shapes. The one in the photo is an extremely fine plant over three feet high, and fourteen inches across the top.

A specimen of the tall heavy growing style of cereus is always a great attraction, on account of its being something out of the common. C. coerulescens, is a beautiful sky blue color, and makes an imposing plant. C. pugioniferous is chiefly noted for its very long and stout spines. C. pasacanus, a rare species, has an almost black stem, and long deflecting spines. Then there is the great C. giganteus of Arizona, and Lower California, which is like the trunk of a large tree, and grows forty to fifty feet high. This also branches sometimes, but the small specimens seen in greenhouses give a fine idea of the giant in its desert home. The Cereus family is a very numerous one, but mention can only be made of a very few here, and there still remains many other families to discuss, and find the attractive members of.

J. H. CALLANDER.

Woodstock, Ont.

HEDGES AND MARGINS OF LAWNS.

MUCH of the beauty and effectiveness of lawns surrounding city and suburban residences is oftentimes greatly marred and in many cases lawns are made decidedly unpicturesque from the fact that unsuitable and inappropriate plants and shrubs—and perhaps trees—are used to form a margin or dividing line between the lawn and its surroundings. Or even worse than this, a close board fence can often be seen without apparently any attempt having been made to hide its bareness from view. When this is the case it detracts very much from the general appearance of the lawn, however nicely the latter is kept, or embellished with plants or other decorative material.

One often sees on lawns of very small dimensions, a row of Norway spruce or perhaps of strong tall growing cedars planted where a row of dwarf growing evergreen or flowering shrubs would be much more attractive and pleasing than a pine or cedar hedge, as the latter oftentimes present a decidedly rusty looking appearance, especially after undergoing the annual clipping process, so necessary to keep them within reasonable bounds. I am aware that the class of trees just mentioned are sometimes necessary to be used as wind-breaks or shelters for lawns. For this purpose they are most effective but the proper place for them is a distance away from the grass plot, where they cannot devour all the nutriment from the flower beds or borders, in such a position that they will have room to grow and develop into beautiful specimens, and where their stately growth and graceful

outlines can be seen to the best advantage. As dividing lines on small lawns, or even as single specimens, tall growing pines and cedars are decidedly out of place and inappropriate, as they either have to be allowed to grow and overshadow and perhaps destroy everything within the reach of their hungry absorbing roots, or their growth has to be clipped and their roots pruned back to prevent them destroying all other plant life growing near them.

There are however many dwarfer growing evergreens and conifers other than those mentioned, that are more suitable for planting on or around small lawns either as dividing lines or as single specimens, where an evergreen hedge is considered to be a necessity. Amongst the best and most easily obtained from nurserymen are the dwarf growing Thuyas or Arbor Vitae, the varieties Thuya Hoveyii and Thuya occidentalis compacta, being probably the hardiest and best of the varieties to be had. Many of the Japanese varieties of the Thuya and Cypress are more ornamental than these native varieties, but are not nearly as hardy, and are much more expensive to purchase.

Amongst flowering shrubs suitable for planting as a hedge around a lawn is the pretty little dwarf growing Spirea, Anthony Waterer. This shrub is probably not sufficiently hardy in the more northern section of Ontario, but in Southern Ontario it succeeds splendidly, and when covered with its bright pink blossoms, as it is generally from July until October, it has a very pretty effect. One only has to see this plant growing in nursery rows to form an idea of its suitability for a dwarf hedge around a lawn. The Spirea Bumalda, and the white variety of the same class (Spirea callosa alba) would also be very effective for the same purpose. The stronger growing Spireas such as S. van Houtii; S. Douglasii, and S. Billardii and the several similar types of these plants, are not as suitable for planting as hedges or dividing lines. Only recently I saw a hedge of the bridal wreath Spirea van Houtii, planted around a lawn as a hedge, that had probably when first planted been very pretty and effective, but owing to its habit of growth it had of necessity to be clipped to keep it within bounds, making it very little better or prettier than a hedge of the common Osage Orange or Honey Locust. Some of the herbaceous Spireas would be found very suitable to use as dividing lines or as hedges around lawns, amongst them being S. auruncus and S. ulmaria alba plena, the latter being the most suitable of the two.

Amongst the Deutzias the most suitable would probably be the popular little dwarf variety D. gracilis, and the newer variety Deutzia Lemonei, although the high price of the latter at present, will probably prevent its being used very lavishly on lawns for a year or two.

Another very pretty shrub is the Berberis Thunbergii, its hardiness and dwarf growing habit making it particularly suitable for forming a low growing hedge.

Amongst herbaceous perennials that can be used very effectively for the above purpose and that are hardy and not expensive, is the old fashioned Bleeding Heart or Dielytra spectabilis. A row of these plants has a most beautiful effect, especially when in flower, on the margin of a lawn during summer. The German and Siberian Iris are also very pretty and effective for marginal lines. These latter could be mixed so as to give quite a variety of color when in flower. The foliage of the Iris is also quite ornamental, if the rows or clumps of roots are kept compact and trim. The dwarf growing Iris pumila is very useful for forming marginal or dividing lines on very small lawns as it grows only to a height of eight or ten inches.

Both the Hemerocallis flava and the

dwarfer growing variety H. Dumorterii can also be used very effectively as line plants, both varieties are hardy and very showy when in flower.

The Yucca filamentosa is often used for the above purpose also.

The common ribbon grass (Phalaris arundinacea variegata) makes a splendid marginal plant for a lawn, and it is both hardy and inexpensive.

The introduction during recent years of so many new and desirable shrubs and perennials suitable for marginal lines or hedges on lawns, makes it comparatively easy to make a selection that is both pretty and useful, without confining oneself to pines or cedar, or the almost evergreen privet for this purpose.

Hamilton. W. HUNT.

THE MOCCASIN FLOWER, OR LADIES' SLIPPER.

LADIES' Slipper is not a word in keeping with hemlock and beech woods, but the word Moccasin throws meaning into the black shadows, and brings to mind the stone axe and flint arrow-heads found not long ago on the edge of a newly-plowed field, that was but recently a piece of these same woods.

"With careless joy we thread the woodland way
And reach her broad domain,
Thro' sense of strength and beauty free as air,
We feel our savage kin;
And thus alone, with conscious meaning, wear
The Indian's Moccasin."

We stopped at a point where a pair of chestnut stumps indicate the entrance to a wood road whose guardian gate-posts and rails now lie among the ferns, keeping shape until touched, and then separating into an intangible powder, half dust, half wood-mold.

On this bank, peeping incautiously from between Bellworts and the black stalks of a little forest of damp and only half-opened fronds of Maidenhair Ferns, was a single Moccassin Flower of unusual size and height, its pouch of an almost crimson hue.

It stood like an outpost, commanding a view both up and down the shady road. I straightway picked it, carefully wrapped its stem and leaves in damp moss, and hid it in the depths of the chaise tops; for, thought I, if, to-morrow being Saturday, any of the people coming down from the back country spy this flower, somebody will surely put two and two together, follow the trail into the woods, and make the whole colony prisoners. And among all our native Orchids this Pink Moccasin Flower is the most hopeless to transplant, as away from its haunt in a year or two at most it pines away, appearing to find some unknown quality in its natal soil with which it cannot be supplied.

Within the wood edge pairs of leaves and single flowers soon become more frequent, but these sank to insignificance when I came in sight of the first tree bowl. There the Moccasins were holding a woodland flower market of their own, peeping over each other's shoulders, crowding the edges of the leafy hollow, straying from the sides and clustering in the bottom, facing this way and that, wearing every shade of color from flesh-white through pink to a deep, veiny purple, and all nodding and swaying as they were continually jostled by the eager bees who came to make their purchases of pollen and nectar.

Notwithstanding the great attraction that a Pink Moccasin Flower in the hand offers

us from its oddity, it is certainly much more beautiful in its haunts. There the paler flowers counteract the somewhat veiny quality of the deeper, and the soft browns of the hemlock-strewn ground act as a setting to the whole, together with the surrounding air of mystery making it one of the half dozen New England Orchids for which true landscape value may be claimed.

Hereabout it is the earliest comer of the tribe. Oh, no! I am forgetting that there is one of another household still earlier, the Showy Orchis, which pierces the mold with its lily-like leaves in late April or early May, in company with Wake Robin, Bloodroot, Anemones, and Yellow Violets. Even Time o' Year does not know its haunt in the deep woods beyond Lonetown on the Ridgefield road, where I cherish a few plants of it, so rare is this region, by letting them alone in the hope that they will increase, and that the seed may be borne to neighboring woods.

This Orchis is most precise in its equipments, and when in its first perfection of bloom, it seems like an artificial plant of wax from its broad leaves, sometimes six inches in length and damp to the touch, to the tip of its spike of half a dozen spurred, shaded purple flowers with broad white or violet tips. Where it is common, it often gathers in crowds like the Moccasin Flowers or Fringed Orchises, but with the few rare plants of my discovering, each kept its distance from the other, as prim as children made ready for a party, who sit perched on chair edges in constrained attitudes to keep finery untumbled until the moment for departure comes.

In common with many of the tribe the Showy Orchis has, on opening, a delicate earthy fragrance that turns to a decided muskiness after the fertilization of the flower; a perfume inseparable from leaf-mold blossoms to whatever tribe they may belong. One quality it lacks, and that is gracefulness. If its flower-stem grew longer before the buds opened, so as to raise them well above the leaves and give the wind a chance to sway and bend them, the primness would vanish, and the Showy Orchis be captivating indeed. At present it reminds one of a lovely woman with so short a neck that she cannot turn her head.

Another Moccasin Flower, a taller cousin of the Pink, has sent a few venturesome pioneers over the hemlock ridge to test the climate and soil on the coast side of it, for this family needs bracing air and usually keeps well away from salt water influences.

The Yellow Moccasin, or, as the French call it, Le Soulier de Nôtre Dame, comes in flower as the Showy Orchis passes, and precedes the exquisitely painted Showy Moccasin Flower, whose splendid rose-and-white blossoms, often two on a stem, seek high places and are seldom found in abundance south of Maine, New Hampshire and Vermont. It is called Regina, for it is queen of a princely family.

The Yellow Moccasin is a striking flower of the high shaded woodland landscape. The uncleft shoe itself is of a clear smooth yellow, veined with purple; the other two purplish petals hang as twisted strings, with a hood-like sepal arching between. The flowers, singly or often in pairs, are raised upon a stout, leafy stalk a foot or two above the ground, clearing the more woody undergrowth which serves as a background to deepen their color.

How the eye loves to linger upon yellow flowers! Of the three primary colors, yellow always seems to me the most harmonious under all conditions, from the first Marsh Marigold to the last brave wand of Golden-rod. Even after hard frosts, the same cheerful color wraps the low thickets wherever Witch Hazel blossoms, giving the landscape, through this last flower of the season, a forecast of the willow tints of early spring.

Roughly speaking, without attempting a

census, it seems to me that taking the year through, the majority of landscape flowers are yellow. At least, such species as wear this color grow in greater abundance than those of other tints. And if the strange yet plausible theory of Grant Allan be true, that all flowers were originally yellow, but that in the processes of evolution they have experimented with other colors only to work back again to the original hue, it is easy to account for the plentifulness of this color.

NOTE.—This is a selection from Mabel Osgood Wright's recent work, *Flowers and Ferns in their haunts;* from the chapter entitled "Some Humble Orchids."

SENDING FLOWERS THROUGH THE MAILS.

SENDING flowers through the mails is a pretty sentiment and often a source of delight to the recipient, especially when the flowers are of a new variety and sent from a long distance by a traveler in token of the places seen and visited. The object of this sketch is to give a few hints as to the best way to pack them to insure the certainty of keeping fresh and fragrant.

Let us suppose that pansies and lilies of the valley are to be arranged for transportation through the mails. A small pasteboard box must be procured and lined with cotton wadding moistened with water; over this make a bed of the leaves from the lilies, and upon these leaves place the flowers. Much taste may be displayed in the arrangement, and upon opening the box the effect will be quite the same as that of a bouquet. Cover the stems of the flowers with damp moss in such a way that they will be firmly imbedded, and thus kept fresh for a long time. Before putting the lid upon the box sprinkle the flowers and place a covering of leaves over them.

A friend who received a box of camelias from Georgia, reported their arrival in perfect condition, Their stems were laid in freshly cut potato. Some florists wrap oiled paper or tinfoil about flowers when all has been done to prevent the escape of moisture. I have received roses packed in their own leaves in a perfect condition after several days.

At Christmas time flowers are a very sweet remembrance for the friends to whom we dare not send anything of more pecuniary value, and a would-be lover may express volumes in the selection of a box of these dainty things for the lady to whom he has not yet made an avowal of his affection.

In winter, flowers are more easily kept moist than in summer, which is the main point to be achieved in sending a long distance.

An excellent authority gives the advice to plunge the stems of wilted and drooping flowers into hot water to about one-third their length, taking care that their blossoms are untouched. This process drives the "sap" back into the flowers, and causes them to revive in a short time, unless already hopelessly faded. Cut away the withered portion of the stem before putting into cold salted water or wet sand, which is better for vases and dishes in which flowers are to be kept, because it will preserve them longer.

Do not gather flowers while the sun is shining upon them, but choose instead the early morning or the hour after the sun has gone down. Avoid pulling or tearing from the plant; cut with sharp scissors or a knife, and in the case of varieties having a large stalk or stem, rub a little dirt over the wound. Always leave as long a stem as possible, not to interfere with other buds or blossoms.—*Jenness Miller in Household Companion.*

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

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 or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

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

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

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

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

NOTES AND COMMENTS.

THE FLORISTS OF HAMILTON have recently organized with Wm. Hunt, President, and P. Lawson Secretary.

MEDAL FOR HORTICULTURAL LITERATURE.—Among the medals awarded at the Pan American, we notice one to the Ontario Fruit Growers' Association, for an exhibit of horticultural literature. This was given for a set of bound and unbound copies of The Canadian Horticulturist which the writer forwarded to Mr. Bunting for exhibition.

We have reason for congratulation over this since this is the only medal awarded for horticultural literature. We also obtained a medal and diploma at the World's Columbian Exhibion for the same.

CONTRIBUTORS FOR 1902.—Our readers will be pleased to know that several talented writers will contribute to these pages during the coming year, and among those who will write a series of articles we have: F. C. Sears, Professor of Horticulture, of Acadia College, Wolfville, N.S.; H. L. Hutt, Professor of Horticulture, Agricultural College, Guelph; W. T. Macoun, Horticulturist, Central Experimental Farm. Ottawa; Wm. Hunt, Professional Gardener, Hamilton, Ont. Besides these there are many others who will contribute occasional articles. Our readers may therefore expect a series of excellent issues of this journal, which we hope will be of great public benefit.

AT THE FIFTH ANNUAL MEETING, the American Park and Outdoor Association, at Milwaukee last June, Mrs. Seavey spoke on encouragement of local improvement work, such as might be done by local Horticultural societies, as follows:—

Your committee suggests, (1) that improvement societies are the already existing nuclei from which great transformations should result; (2) that im-

provement work should be submitted to business men as a business proposition; (3) that the hygienic disposition of household waste is a paramount question that should be considered by every improvement organization; (4) that bad conditions in cities are the logical out-growth of bad conditions in towns, villages and in the country, and that these should be traced to their sources and preventive and remedial measures instituted all along the line; (5) that interested assistance is likely to follow definite statements of bad conditions if accompanied by a clear outline of practical means for overcoming them; (6) that twentieth century intelligence, admitting that the whole is greater than its parts, plans in a large way before executing details; (7) that large aims and earnest work bring their own reward. and lastly (8) that if one person present absorbs the notion that it would be vastly fine to line every approach to the home town with red bud, and wild crab, and wahoo and invite the birds and the squirrels to live in them and—goes home and does it—your committee will feel that "it has done what it could."

We would advise our Horticultural societies to correspond with Mr. W. H. Manning, landscape architect, 1146 Tremont Building Boston, who is secretary of this Association, for terms on which each society could become associated and receive the reports.

ONTARIO'S TRIUMPH at the Pan-American is indeed a matter for congratulation. "Our display in fruit," said the Hon. John Dryden at the Horticultural Building one day of the closing week of the Pan, "has been a revelation to the Americans, and, in some respects, to ourselves. Few Canadians understood, prior to this Exposition, the great possibilities opened up by cold storage in connection with fruit production. Here are apples, of last year's crop, still in perfect condition at a time when our winter apples of this season's growth are already matured. This means that apples which have heretofore been sacrificed in the fall can hereafter be held without loss in quality until a fair market is obtained. Some fear this will mean transferring the crop in the fall from the hands of the producers to those of speculators, and that dealers rather than growers will thus reap the principal profit on our staple fruit crop. But there is no reason why this should be. The law provides a ready means for the establishment of co-operative cold storage depots, and the Provincial Treasury can even be drawn upon to assist in construction of the same.

"Our fruit display has also impressed thousands and thousands of strangers with the capabilities of our Province in this line. The only mistake we made was not realizing soon enough the advertising possibilities in the Pan-American. We should have prepared a year in advance for the work undertaken. Even as it is, we have more than held our own, and have convinced our friends across the lines that we have both the quantity and the quality in fruit.

APPLE REPORTS.

MESSRS. Woodall & Co.'s report, dated Liverpool, October 19, is not very encouraging to shippers and leads us to infer that better money can be made by sales at home than abroad

The arrivals this season to date are 32,545 barrels, against 83,772 during the corresponding period last year, and it would appear that the crop is the smallest for some time past. The prices realised so far, except in a few instances, are anything but satisfactory; and it is the same old story, that early fruit mostly arrives in doubtful condition, and, even if sound, does not show sufficient superiority over the home crop—which is marketed at this time—to command remunerative prices. There has been an enormous crop of stone fruit, which interfered with the demand for apples. The results are, no doubt, disappointing, but only what was to be expected, and it is no criterion as to what really good sound winter

stock will bring ; there is little doubt such will realise a high range of prices, provided the quality is attractive. It however often happens that a small crop is caused atmospheric conditions unfavorable to the keeping quality and development of the fruit, in which case disposal on the home market is the better policy. Arrivals have been from all shipping ports, including Nova Scotia, and the above remarks apply to one and all. A special feature is that Canadian Snows are again arriving mouldy, and consequently sell at a wide range of prices, but mostly at very low rates.

A fair quantity of Virginian Albemarle Pippins has arrived, but, so far, are most unattractive, being green, dull, and, in many instances wormy and spotty, and quite unsuitable for a fancy trade ; consequently buyers would not give them attention, and they were moved with difficulty at low prices.

A small lot of boxes Californian Newtons, retailed at 12/6 for 4 tiers.

Cable Report of London Market, Nov. 8th, 1901, by F. A. O'Kelly & Co.: Nova Scotians, Kings 18s to 22s, Ribstons 15s to 20s, Blenheims 17s to 21s, Culverts 14s to 20s, Newtown Pipppins 30s, strong demand for best quality, Keiffers 10s 6d to 18s according to quality, California Newtons 9s to 9s 6d.

QUESTION DRAWER.

Whale Oil Soap.

1261. SIR,—Can you let me know through the next journal where I can get whale oil soap, and at what price per lb., as I wish to try some this winter. I hear that the San Jose Scale is coming this way from Kingsville, where they have it very bad. Yours respectfully,

M. G. BRUNE,
Essex Co., Ont. Olinda P. O.

J. G. Ward, Consecon, Ontario, manufactures whale oil soap, and will be glad of your order.

Also better consult Mr. Geo. G. Foster, Burlington, Government Inspector, of San Jose Scale.

Oyster Shell Bark Louse.

1262. SIR,—When is the best time to spray, and with what material for the oyster shell scale? Does fall, winter, or early spring spraying have any deterrent effect on the aphis on plum and cherry?

St. Thomas, Ont. A. W. GRAHAM.

The best time is about June 1st, when the young lice are leaving the cover shell of the old mother, and trying to fine a new spot on which to raise a colony.

Apples for Oxford County.

1263. SIR,—I intend to plant a couple of acres of apples for commercial purposes and to fill in the rows temporally with small fruit or early bearing apples.

How would Baldwins, Northern Spy, Ontario and Ben Davis do for permanent trees?

Is the Cranberry Pippin, which I see you recommend for export, suitable for this district?

Would you plant Wagener in between the others? What others would do for the same purpose?

I have taken the Horticulturist for nine years now and enjoy reading it very much. Yours truly,

Embro. D. M. ROSS.

The varieties you mention are well chosen as permanent trees in your orchard ; the Cranberry Pippin is a little uncertain, and we would not like to recommend it too highly. At Maplehurst, with good cultivation and fertilizing, it grows larger than Ben Davis, and fully better colored, and as the background yellows in midwinter, it is especially attractive. But if at all neglected the fruit becomes warty, a blemish to which the Ben Davis is not subject.

We would not plant Wagener or any other apple tree between the regular orchard

trees because they would yield so little fruit before they would need to be removed.

If it is desirable to make the ground pay the expenses of cultivation, we would advise growing small fruits or some other hoed crop.

The Honey Bee.

1264. SIR,—Are the days of the bees numbered? It would seem so from what we read about them in your last issue of the Horticulturist, page 470. Would it not be well to cover a few trees altogether with sacking or mosquito netting and such varieties that are most subject to the disease, such as Winter Nelis, Flemish Beauty or White Doyenne, in place of covering a branch on the tree. The branch covered might be the only one on the tree or trees that might escape if not covered while if the whole tree was covered and then the disease took hold there would be a reason for believing. A simpler way would be to send the bees away to the Klondike for a season, or some other place and prove the innocent creatures guilty. My belief is that the death blow is very simple to the blight such as recommended by J. J. Graham to produce an apple crop (page 487 your last issue) or a similar one, such as proper pruning, moisture and the suitableness of the soil and its cultivation. Why does not the bees introduce the disease to the Keifer, Buffam and others we could mention.

R. CAMERON.

Since the bees can only carry blight from tree to tree during the brief season of blossoming, it is a very easy matter to see that no blighted trees be allowed to bloom. Such trees should be carefully cut out and burned before that season, and then the innocent bee will be perfectly harmless in regard to the spread of blight.

Open Letters.

Rufus.

SIR,—I am sending you some specimens of the Rufus apple, a seedling which originated at Perth, Ont., in the garden of Lt.-Col. Matheson. I have sent some specimens to Hutt also, as I thought it was promising enough to mention in the report on new fruit.

W. T. MACOUN,
Horticulturist C. E. F., Ottawa.

This apple is rather attractive in appearance, of medium size, conical, covered with bright red, and dark red on sunny side.

The flesh is white, tinged with streaks of red, crisp, moderately juicy, and very agreeable flavor.

Horticulture in California.

SIR,—I am immensely pleased with California; its scenery, climate and flowers and fruits. It is indeed a country of extremes, high snow-capped mountains enclosing beautiful verdant valleys, flowers of all kinds, roses more especially. Cacti grow in abundance in the Mojane desert, only 20 miles from here, and you may imagine how I am in my delight. Even now at this late date we are picking strawberries from a patch that has been producing without intermission since last March, the Jessie variety. Grapes here produce and ripen three crops a year, but are not of the same variety as in Canada; one kind is entirely seedless and very nice. They sold well here last year, sales averaging $30 per ton on the vine. Nearly all grapes are used for wine or raisin making. There is an immense amount of fruit of all kinds dried in the sun. Fruit here, although of the same varieties as with you, Bartlett pears, Crawford peaches, etc., appear to have quite a different texture, and if not picked will not rot but simply dry up on the tree. Surely it is not on account of lack of moisture, as here we irrigate our orchards once a month most thoroughly as water can be had at all times and is very cheap too. The melted snow from the mountains is the only source we get it from. There ase many kinds of peaches and plums here that I think would be profitable with you, also of grapes. I shall be pleased to mail you scions if you should wish them. We are having beautiful weather now and have only had one rain since last April. The leaves on the trees are as green as in April, and the palms and magnolias I especially admire. Everything seems to grow with such ease and perfection. I am often thinking of the Horticultural Society and will with your approval write a paper to read at one of the winter meetings on "Flowers in California." There are no Horticultural Societies here, and I may add no need of the spray pump, for there are very few bad insects or fungoid diseases.

Bakersfield, Cal. N. KEEP.

Spraying.

SIR,—This year, in spraying, I used 2½ lbs. blue vitriol, 3 lbs. of lime and 4 oz. of Paris green to 40 gallons of water, instead of full strength as heretofore. I sprayed three times after the blossoms dropped, at intervals of ten days. The foliage of the Japan plums and sour cherries nearly all dropped off. The aphis was very bad on those trees this year, was it the spraying or the aphis that caused it? Apple, pear and European plums were all right and bore heavily.

Yours truly, A. W. GRAHAM.

Thujopsis dolabrata.

SIR,—Has any of the readers of your valuable journal had any experience as to the hardiness of Thujopsis dolabrata argentea variegata of Japan? I have a good specimen, but I am afraid to risk it out during the winter. I know of but one plant, at the late Senator Sanford's residence in Hamilton. It was grown in a pot like my own, and I was told by the gardener there that the plant was sent to Senator Sanford by Princess Louise. The above is a beautiful plant if found to be hardy. Will someone please report upon it.

R. CAMERON.

Fruit Export and Imports.

DEAR SIR,—I beg to send you the enclosed which I think may be useful to publish, when we expend nearly $4,000,000 on other peoples' fruit, and we have no corresponding value in exports.

G. H. FAWCET,

Customs Department, Ottawa.

Exported during the year ending 30th June, 1901.

Apples, dried, lbs	$4,325,854	$ 191,193
" green, bbls	678.651	1,482,927
Berries		112,441
Canned and preserved		181,438
All others		39,144
		$2,007,143

Statement showing the kind, quantity and value of fruit imported into Canada and exports therefrom during the year June 30th, 1901.

	Quantity.	Value.
Cocoa Nuts, No	2,257,806	$ 40,569
Dried Apples, lbs	97.930	7,158
" Currants, "	3,121,722	219,072
" Dates, "	1,634,190	30,285
" Figs, "	2,705,430	90,094
" Prunes, "	4,616,342	149,091
" Raisins, "	13,131,663	753,798
" other, "	1,997,457	117,850
Nuts, Almonds "	699,291	120,545
" Brazil, "	57,441	5,399
" Pecan, "	512,053	30,392
" Walnuts, "	1,050,813	88,054
" other, "	4,343,458	67,413
Green fruits—		
Apples, bbls	26,357	74,922
Blackberries, goose, raspberries, etc., lbs	1,079,652	80,366
Cherries, lbs	105,607	9,547
Cranberries, bush	13,570	26,199
Currants, lbs	915	49
Grapes, "	1,091,536	59,915
Oranges and Lemons, boxes	532,112	919,809
Oranges and Lemons, ½ boxes	40,839	52,127
Oranges and Lemons, other packages		126,486
Oranges and Lemons, bulk, No	16,476	121
Oranges and Lemons, barrels	18,066	45,820
Peaches, lbs	2,094,557	52,043
Plums, bush	36,712	36,465
Quinces, "	1,383	335
Bananas, bunch	581,624	570,479
Pineapples, No	925,288	86,066
Guavas, Mangoes, Shaddocks, Pomegranates, etc		3,049
Wild Raspberries, berries		701
Other dutiable		61,593
		$3,936,712

Our Fruit at Glasgow.

SIR,—Our fruit of last year, now over 12 months old, is still in capital condition. I have not seen any new Canadian apples to surpass them, although I have attended several of the sales at the Bazar and at Simonds & Jacobs where several thousand barrels were disposed of,

I was pleased to see that nice apples brought good prices, up to twenty-eight shillings per barrel. From that down to thirteen shillings, were common prices. Sad to say many badly packed lots were sold at much lower prices. Several lots too, seemed to have heated on the voyage and were badly spotted, so that it is not to be wondered at that they sold at low prices.

I saw some lots that had crossed in cold storage and some that had crossed in well ventilated compartments, and must say that there was but little if any, choice between the two. I rather prefer those from the ventilated compartments. I believe it would be advisable to place registering thermometers in all ship's compartments in which fruit is shipped, whether in cold storage or merely ventilated compartments; we would by that means have the satisfaction of knowing what the temperature was during the passage.

The reason of my preference for the simply ventilated compartment is that apples out of cold storage become so wet immediately on being exposed for sale that they have a bad appearance, they do not look as well as we could wish and consequently do not sell as well. Another reason is, that they sometimes lie exposed on the wharf a day or two after being discharged and during that time they become exceedingly wet, and if they go into cold storage in that condition their last state is worse than the first.

Apples that are to be kept a long time would be better of being shipped in cold storage and immediately transferred to the cold storage on being discharged from the ship, there to remain until the date of sale. But, apples that are to be sold on arrival, would, I am convinced, sell better from mere ventilated compartments.

All our apples for exhibition were packed and shipped in cases with the exception of five barrels. Many of the cases reached us in an almost perfect condition, some of them without a single damaged specimen, and we have to-day, October 13th, many kinds that are as firm and as fine in texture and flavor as they were in May and June, or as when they were gathered.

There is nothing in connection with this exhibit, that more astonishes visitors than the beauty and quality of these year old apples. We sample them freely on suitable occasions.

Shall I say that many apples come to us in very bad condition, one lot of very fine fruit had evidently been packed in barrels at first, and were afterwards transferred to the cases, wrapped in

one fold of tissue paper, without any other packing between them or between the layers; needless to say that those splendid apples were almost a total loss, whilst those that were wrapped in double tissue paper, the inner fold waxed, and packed in excelsior or placed in separate compartments, came as nearly perfect as we could hope for, and might have sold from May till August for from four to five dollars a case.

Some of the varieties still on the table in good condition are the following, viz:

Blenheim Orange, Ben Davis, Fallawater, King, Ben Davis, Black Detriot, Canada Red Baldwin, Bottle Greening, Greening R. I., Cranberry Pippin, Eccles from New Brunswick, Spitz, Lawver, Seeks, Holland pippin, Gold, Russet, Rox Russet, Wealthy, Winter St. Lawrence, Stark, Spy, La Salle American pippin a splendid keeper and sort, Malinda (new Russian, a fine keeper), Ribston pippin Bethel, Pewaukee, Swaar, St. Antoine, Andrew's Seedling (a fine keeper). L. W. Seedling (a fine keeper), Grimes Golden Coopers Market (a splendid keeper), Nonpariel, Newton pippin, besides about half a dozen sorts that came from Nova Scotia without name that are unknown to me.

Yours truly,
ROBT. HAMILTON.

Canadian Section, Glasgow
International Exhibition, 1901.

OUR AFFILIATED SOCIETIES.

THE DESERONTO HORTICULTURAL SOCIETY held their 5th annual flower show in Union Hall, on Wednesday, Oct. 2nd, and it was a decided success. The Citizen's Band provided music, and an ice cream stand under the able management of the charming president contributed largely to the enjoyment of the evening. The fine bank of ferns which faced the main entrance was much admired, and the collection of palms to the left contained some splendid specimens of rare and beautiful plants. The two collections of greenhouse plants were worthy of careful study, and they received it. The arrangement of the plants in both collections showed that the gardeners were skillful and artistic florists. In the amateur classes the exhibits were good, but the number of entries were not as great as they should have been. The large display of cut bloom was somewhat of a surprise on account of the lateness of the season, and the bouquets were much admired. The design of cut blooms exhibited by P. Casburn, was the finest ever shown in Deseronto, and J. T. Riddle's bouquet of garden flowers extremely artistic. It is questionable if a finer show of vegetables has been seen in Canada this fall—there may have been larger collections but the quality of the exhibits could not be surpassed. In the Public and High school competition Miss Gwendoline Lloyd carried off the first vice-president's prize. The display of fruit was not large, owing to the lateness of the season, but what was shown was highly creditable to the exhibitors. Those in charge of the exhibition are deserving of all praise for the perfection of the arrangements, and for giving so much pleasure to the large number of citizens who visited the flower show of 1901.

LITERARY NOTE.

The building of a grain elevator in the face of difficulties that would baffle nine men out of ten, and the falling in love of the builder, and you have the plot of *Calumet "K,"* by Mervin-Webster. But you also have much more. You have a practical illustration of the point made by the writer of *A Message to Garcia*—that success waits the man who sees that his employer's interest is his own—the man for whom difficulties are an incentive, and not the cause of foolish questions or excuses for non-performance.

The Best Christmas Gift For a Little Money:

Sent as a year's subscription to THE YOUTH'S COMPANION $1.75 will buy the fifty-two weekly issues of THE YOUTH'S COMPANION for 1902.

It will buy the two hundred and fifty fascinating stories in the new volume for 1902.

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Full illustrated announcement of the new volume for 1902 will be sent to any address free.

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195 Columbus Avenue, BOSTON, MASS.

A Handkerchief Worth $1200.

Among some superb photographs of "The Handsomest Laces in America," which occupy a double page in the Ladies' Home Journal for September, is shown an exquisite handkerchief valued at $1200. When one closely examines the weblike film, and the remarkable detail of the dainty design, this sum seems none to much to pay for such a piece of work. Its making doubtless occupied the greater part of one woman's life. The handkerchief is now the property of the Drexel Institute in Philadelphia, to which it was presented by the widow of George W. Childs, the famous journalist and philanthropist. The other beautiful laces shown on this page are owned in New York and Boston, most of them being included in the collection loaned to the Metropolitan Museum of Art by Mrs. Astor. This collection is valued at the enormous sum of $62,000

Never Forget the Note of Thanks.

Be sure to send a note of thanks for a gift received at the earliest possible moment. Write it before your ardor cools. Make it hearty, spontaneous, enthusiastic. You need not be insincere. Even if you do not like the gift you must like the spirit that prompted it. Never defer writing with the idea that you will thank the giver in person. You may do that as well when opportunity offers, but do not risk delay. Nothing is more discourteous than belated thanks.—The Ladies' Home Journal for December.

PLANT DISTRIBUTION FOR 1902.

Free to subscribers to Canadian Horticulturist.

We are now offering special inducements to new subscribers for 1902, giving them the Journal from date of subscription until Jan. 1st, 1903, and their choice between our new introductions A, and B, described below. Send in both old and new names for 1902 as soon as possible, before the stock of plants is exhausted.

A. Fruit Plant, "ICEBERG" The New White Blackberry, the Paradox of the Fruit World. Two Plants.

THE following is Mr. Burbank's own description, and its accuracy will be vouched for by all who know him, as he is commendably conservative in all that he says about his creations. In his desire to mislead no one, he leans rather toward under-rating than exaggerating the value of his originations. He says:

"Owing to the somewhat unsatisfactory qualities of White Blackberries so far known, the impression may have been entertained by some that no White Blackberry *could be* as productive and hardy, with berries as early, abundant, large, handsome and delicious, as the best black ones.

"The well-known Lawton is when ripened, unsurpassed, and very generally known as the most productive market berry. Owing to its fixity of race, it will reproduce itself from seed almost exactly, and its seedlings will not be influenced, when raised from seed pollenated by other varieties, but it steadily imparts its good qualities when employed as the staminate parent. One of the great grandparents of 'Iceberg' was Lawton. The first generation of seedlings when crossed with Crystal White, was all black; the second also, though varying much in other respects; but the third produced this wonderful plant bearing the snowiest white berries ever seen.

"Very little attention was paid to the long rows of cross-bred descendants, until one day this berry was discovered, among its black relatives, with the canes bending in various directions with their load of delicious, snowy berries, which are not only white, but so transparent that the seeds, which are unusually small, may be seen in the berries when ripe.

"Clusters, larger than those of Lawton; berries, as near as could be judged, were at least as large, earlier, sweeter, and more tender and melting throughout, though as firm as Lawton is when ripe."

B. Flower, Deutzia Lemoinei, (shrub.)

The introducers describe it as follows:—

Flowers pure white. In comparison with other Deutzias it is ahead of them all, in that it blooms more abundantly and earlier. Its trusses are larger, double and not single. Can be readily forced with ordinary care in the house in the winter time to bloom about Easter, thus producing excellent flowers when such a color is in greatest demand. This plant cannot fail to give satisfaction for both indoor and outdoor use. It is dwarf in growth, being about 12 to 14 inches high when delivered, having severa branches. It is being introduced by nurserymen at 75 cents each plant.

A WORD TO OUR SUBSCRIBERS.—We submit the list much earlier than usual because we want to get all our renewal orders for 1902 in before the end of 1901. We want to make the year (1902) a record breaker for the membership of our Association, so we are offering each subscriber a choice between these two beautiful plants, both of which are new and valuable.

Any person sending in two names and two dollars, may have an extra plant in place of commission and thus have for himself both the Deutzia and the blackberry "Iceberg."

New Subscribers sending in one dollar for the year 1902, may have the balance of the year 1901 free, in addition to choice of plants.

No plants can be promised to those who do not make selection when paying the subscription.

Remember the old proverb, "First come first served," so the sooner you send in your subscription and select your plant, the more sure you are that the stock will not be exhausted.

Horticultural Societies or Agents are allowed to select an extra plant in place of the commission allowed for each subscriber, in which case, of course the whole $1.00 must be remitted us for each person on the list. In this way a society could, if desired, secure two different plants from our list for each of its members, the value of which at retail would nearly equal the whole membership fee.

PLEASE NOTICE that the descriptions above are by the introducers. We expect our readers to test them and report whether these novelties are as described.