

ANNUAL REPORT

OF THE

POMOLOGICAL AND FRUIT  
GROWING SOCIETY

OF THE

PROVINCE OF QUEBEC

---

1896.

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PRINTED BY

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QUEBEC, 1897.

HON. SIR HENR

J. M. FISK .....

R. W. SHEPHER

J. C. CHAPPAIS..

S. A. FISHER.....

W. W. DUNLOP.

No. 1 District—

" 2 " J

" 3 " J

" 4 " I

" 5 " A

" 6 " I

" 7 " F

" 8 " V

" 9 " F



## LIST OF OFFICERS FOR 1896.

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### HONORARY PRESIDENT

HON. SIR HENRY JOLY DE LOTBINIÈRE..... Quebec.

### HONORARY VICE-PRESIDENTS

J. M. FISK ..... Abbotsford.

R. W. SHEPHERD..... Como.

### PRESIDENT

J. C. CHAPAIS..... St. Denis, Kamouraska.

### VICE-PRESIDENT

S. A. FISHER..... Knowlton.

### SECRETARY

W. W. DUNLOP..... Outremont.

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No. 1 District—	DAVID WESTOVER.....	Frelighsburg.
" 2 "	J. M. FISK.....	Abbotsford.
" 3 "	JAMES H. CARTER.....	Massawippi.
" 4 "	HON. SIR HENRY JOLY DE LOTBINIÈRE.....	Quebec.
" 5 "	AUG. DUPUIS.....	Village des Aulnais.
" 6 "	DR. GRIGNON.....	Ste. Adele, Terrebonne.
" 7 "	EDWARD A. BARNARD.....	L'Ange Gardien.
" 8 "	W. F. HALCRO.....	Hudson.
" 9 "	R. BRODIE.....	St. Henri.

## LIST OF MEMBERS, 1896.

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Ainslie, James.....	Outremont.
Arpin, C.....	St. Johns.
Barnard, E. A.....	L'Ange Gardien.
Blanchard, J.....	Abbotsford.
Ball, J. Raymond .....	Knowlton.
Bradford, R. C.....	Abbotsford.
Buzzell, E. A.....	Abbotsford.
Buzzell, G. W.....	Abbotsford.
Bachelder, J.....	Rougemont.
Bourque, F. Y., Curé.....	St. Alexandre, Kamouraska Co.
Brodie, R .....	St. Henri.
Blanchet, Joseph.....	St. Jean Port-Joli.
Chapais, J. C.....	St. Denis, Kamouraska Co.
Craig, W.....	Abbotsford.
Corriveau, A. J.....	Iberville.
Campbell, R.....	Quebec.
Castel, E .....	St. Hyacinthe.
Carter, J. H .....	Massawippi.
Carboureau, Rev. C. A.....	Isle Verte.
Campbell, Bruce F.....	St. Hilaire.
Cooke, G. E.....	Outremont.
Demers, J. B.....	St. Johns.
Davies, G. E.....	Stanbridge East.
Douth, Curé L. E.....	St. Leonard d'Aston, Nicolet Co.
Decarie, T.....	Notre-Dame de Grace.
Dupuis, P .....	Abbotsford.
Duggan, W.....	Quebec.
Decarie, Jeremie.....	Notre-Dame de Grace.
Dunlop, W. W.....	Outremont.
Dupuis, A.....	Village des Aulnaies, L'Islet Co.
Edwards, G. B.....	Covey Hill.
Fisk, C. A.....	Abbotsford.
Fisher, Hon. S.....	Knowlton.

Fisk, J. M....  
 Fisk, C. O....  
 FitzGibbon, I....  
 Fisk, Newell  
 Fraser, John.  
 Frenette, Curé

Gareau, J. J....  
 Giroux, N. J....  
 Gray, James.  
 Gagnon, F.....  
 Gibb, J. J.....  
 Grignon, Dr....

Herrick, J. E.  
 Halero, W. F....  
 Horsey, Rev. E.  
 Hitchcock, G. I.  
 Heatlee, W ....  
 Hampson, R ...  
 Hutcheson, J. I.  
 Hodgson, W.....

Jack, Norman I.  
 Johnson, Asa....  
 Joyal, J. Hormi

Lang, Charles ..  
 LaRocque, Dr.  
 Leclere, C. F....

Miner, S. H. C....  
 Moreau, Dr. H....  
 Marshall, W.....  
 Middleton, John.  
 Morris, William.  
 Macaulay, T. B..  
 Macfarlane, P. ...  
 Macdonald, A....  
 McGibbon, D. E..

Newman, C. P .....

O'Cain, James.....

Parkes, T. J.....  
 Park, James .....

Pattison, W. M ...  
 Paradis, C .....

Pelletier, J. B.....  
 Price, Herbert M ..

Fisk, J. M.....	Abbotsford.
Fisk, C. O.....	Abbotsford.
FitzGibbon, Robert.....	Montreal.
Fisk, Newell .....	Montreal.
Fraser, John.....	Coaticook.
Frenette, Curé C. E.....	St. Jean Port-Joli.
Gareau, J. J.....	St. Roch l'Achigan.
Giroux, N. J.....	River Beaudette.
Gray, James.....	Hudson.
Gagnon, F.....	St. Denis, Kamouraska Co.
Gibb, J. J.....	Como.
Grignon, Dr.....	St. Adele.
Herrick, J. E. R.....	Abbotsford.
Halcro, W. F.....	Hudson.
Horsey, Rev. H. E.....	Abbotsford.
Hitchcock, G. P.....	Massawippi.
Heatlee, W .....	Stonefield.
Hampson, R.....	Montreal.
Hutcherson, J. H.....	Montreal.
Hodgson, W.....	Como.
Jack, Norman E.....	Chateauguay Basin.
Johnson, Asa.....	Cowansville.
Joyal, J. Hormidas.....	St. Michel, Yamaska Co.
Lang, Charles .....	Chateauguay.
LaRocque, Dr. G .....	Quebec.
Leclere, C. F.....	St. Jean Port-Joli.
Miner, S. H. C.....	Granby.
Moreau, Dr. H.....	St. Johns.
Marshall, W.....	Abbotsford.
Middleton, John.....	Point Fortune.
Morris, William.....	Sherbrooke.
Macaulay, T. B.....	Montreal.
Macfarlane, P.....	Chateauguay.
Macdonald, A.....	St. Johns.
McGibbon, D. E.....	Brownsburg.
Newman, C. P.....	Lachine Locks.
O'Cain, James.....	St. Johns.
Parkes, T. J.....	Montreal.
Park, James .....	Hudson.
Pattison, W. M .....	Clarenceville.
Paradis, C .....	St. Denis, Kamouraska Co.
Pelletier, J. B.....	Matane.
Price, Herbert M .....	Quebec.

Rowell, S. P.....	Abbotsford.
Roy, H.....	St. Johns.
Robinson, E. N.....	Granby.
Roach, G. E.....	Abbotsford.
Reynolds, G. H.....	Frelighsburg.
Robson, James .....	Outremont.
Smith, E. R.....	St. Johns.
Shepherd, R. W.....	Como.
Savage, J. G.....	Montreal.
Stuart, G. G.....	Quebec.
Smith, Malcolm.....	Lachute.
Sicotte, E.....	Boucherville.
Stevens, Rev. Albert.....	East Hatley.
Spencer, E. E., M.P.P.....	Frelighsburg.
Tremblay, W.....	Chicoutimi.
Torrance, Mrs. W. F.....	Montreal.
Thompson, H. W.....	Hudson.
Tessier, F. D.....	Mount Oscar.
Van Vleit, G. M.....	Lacolle.
Van Vleit, W. B.....	Lacolle.
Wintle, Gilbert .....	Como.
Westover, D.....	Frelighsburg.
Wood, Dr.....	St. Johns.
Whitney, R.....	Abbotsford.
Wilkinson, G. H.....	St. Johns.
Wood, Hon. Thos.....	Dunham.
Wonham, W. R.....	Montreal.

Winter Meeting  
 Cold Storage ( )  
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 Summer Meeting  
 Remarks on the  
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 The Newer Vari  
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 A Glance at the  
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## FINANCIAL STATEMENT.

The Financial Statement of The Pomological and Fruit-Growing Society  
of the Province of Quebec for the year 1895:—

### RECEIPTS.

Cash on hand, January 1.....	\$233	09
Government Grant.....	500	00
Members subscriptions.....	100	00
	\$833	09

### EXPENDITURE.

Stationery, printing, etc.....	\$ 40	35
Express.....	0	30
Plants.....	6	00
Directors' expenses attending meetings.....	151	59
Stenographer reporting meetings.....	100	00
Stamps.....	25	50
Secretary .....	100	00
	423	74
Balance cash on hand.....	\$409	35

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# THE POMOLOGICAL AND FRUIT-GROWING SOCIETY

OF THE

## PROVINCE OF QUEBEC.

The Pomological and Fruit-Growing Society of the Province of Quebec opened its third winter meeting in the Court House, St. Johns, Que., on Wednesday evening, February 12th, 1896, the president, Mr. R. W. Shepherd, in the chair.

In opening the proceedings the President said :—Owing to a misunderstanding regarding the hall in which this meeting was to have been held it has been thought that it would be better to have the opening meeting to-morrow night, instead of to-night, as at first intended. The addresses of Professor Fletcher and Professor Craig, which are more for ladies than for gentlemen, will be delivered to-morrow night, when we hope to have a good attendance of the fair sex. I had prepared an address, but I will postpone delivering it until to-morrow night, as it has some reference to what work the ladies can do for us. To-night we will just proceed with some of the ordinary business. I think we might take up the question of "Spraying," and it might be a good idea to hear reports from various districts as to the good results obtained by adopting it.

Mr. R. Brodie—Professor Craig instructed me about the first spraying I ever attempted, and I think he should be the one to give his views.

The President—We want to get the local experience.

Mr. Brodie—Very well. My apple crop last year was light, on account of the frost, but the few fruit I had were very clean and good. I noticed the effect of spraying much more on the pears than on the apples, and especially on the Flemish Beauty. Other years they have been all cracked and worthless, but this year they were as fine as you would wish to see. I find that the great thing is to get good apparatus to spray with. Many of the pumps introduced are very good, but most of them tire out the ordinary workman. I find that the best is either a brass pump or one with a brass lining. The ordinary iron pump soon wears away, and it requires repairing very often. The pump I use at present is one I got from Benton Harbor, Mich. It is an expensive pump, but the men can work the whole day with it, and they are not fagged out by night.

Mr. E. A. Barnard—What was the cost ?

Mr. Brodie—I paid \$22 for it delivered here, but, perhaps, I got a bargain to get it introduced.

Mr. Barnard—What is the name ?



Mr. Brodie—Morrell & Morley.

Mr. W. W. Dunlop—Has it to be screwed on a barrel ?

Mr. Brodie—Yes, on to an ordinary coal oil barrel, and the nozzle I like best is the McGowan.

Mr. Barnard—Do you know how much the nozzle costs ?

Mr. Brodie—I think about \$1.75.

Mr. Barnard—In the market ?

Mr. Brodie—Yes.

A voice—\$1.50.

Mr. Barnard—Will it wear more than a year ?

Mr. Brodie—Yes ; it will last for a long time. The great trouble I find is to spray the eastern side of the trees, as, the westerly winds prevailing, we are apt to get a shower of the chemicals against ourselves.

The President—It knocks the spots off you.

Mr. Brodie—It puts the spots on our clothes. Mr. Craig came to our neighborhood to show us how to spray. He had on an expensive hat ; the wind blew the spraying mixture all over it, and he went away with a hat worth twenty-five cents.

The President—Do you find the spraying has been done by the neighbors in your vicinity ?

Mr. Brodie—No ; only three took it up this year, but they proved it a success.

The President—How many years have you been spraying, Mr. Brodie ?

Mr. Brodie—I suppose five or six years. I used to spray with Paris green alone for the codling moth and caterpillar. At that time our president had no faith in spraying, but I am glad to see that he has been converted.

Mr. Barnard—If you carry on the spraying sufficiently often it will cure the spot, even in the worst soils.

Mr. Brodie—Yes, it will prevent it. So far, I find that our neighbors on each side don't spray, and the disease spreads from one orchard to another. When we all spray we shall notice the effect better.

Mr. C. Newman—I think that spraying is a necessary and profitable operation for an orchard, and in cases where it has been tried and not found so, the fault is that it has been done either insufficiently or imperfectly. I think that a brass pump is the best one to use, especially when spraying with copper sulphate, as in an iron pump it will rust out, and you can get no pressure. Much is said about the earlier spraying, and I think that in some sections of the country the earlier sprayings, if properly made, may answer entirely ; but in

large orchard to be made. spraying is not out will collect say that the just as soon as spraying be the same especially with after spraying the work is done I dare say to entirely.

Mr. J. M. meet with good and I had not to have been

Mr. Barnard

Mr. Fisk—fruit, but I can of my neighbors not spray, had been one in which it was a season. So far as the fruit the orchards with fruit with those the foliage. I past season was first sprayed after season, and, from copper sulphate it gets to work so much, and I portant of all spraying. Most where the trees

The President something more

Mr. Fisk—also enrich the soil want to restore which ; but I am soil by frequent

large orchards, and especially around Montreal, I think the later sprayings have to be made. There is a great deal of infection in these orchards, and if the spraying is not done after the tree has stopped growing, the later leaves thrown out will collect the germs and the fruit will be spotted. In such cases I should say that the last spraying would be the most effective, say about the 20th June, just as soon as the tree stops growing. I sprayed considerably last season, and as spraying increases I think an improvement will be noticed, as there won't be the same amount to destroy after one season has been properly done, more especially with regard to insects. A great many people may be discouraged after spraying once or twice and not getting clean apples. The more perfectly the work is done, I think the more profit there will be in it. In a bad season I dare say that you would almost need to exterminate the fungous germs entirely.

Mr. J. M. Fisk—I have done something in spraying. A year ago I did not meet with good success, as the season was very unfavorable, on account of wet, and I had not the proper nozzle, and the one I had I did not put on as it ought to have been put on. Consequently my "success was a failure." (Laughter.)

Mr. Barnard—Was that this year?

Mr. Fisk—It was '94. The past year I sprayed, and I had much better fruit, but I cannot say positively that it was due entirely to spraying, as many of my neighbors, with orchards situated in the same soil as mine, and who did not spray, had fruit about as good as mine. The past season seems to have been one in which the fungous growth did not develop as previously. I think it was a season in which you could not judge of results as well as in the past. So far as the foliage was concerned there was a marked difference in favor of the orchards which were sprayed. Those not sprayed, but which had equal fruit with those that were, showed a falling-off in the color and healthfulness of the foliage. I have come to the conclusion that in my case spraying during the past season was a benefit. With regard to the number of times of spraying, I first sprayed after the leaves came out. Vegetation came on very rapidly last season, and, from what I have read, I should judge that the first spraying with copper sulphate alone is an important one, because you strike the germ before it gets to work. If you destroy it before it is deposited on the foliage, you gain so much, and I think the first spraying should be looked upon as the most important of all. In old orchards I am satisfied that we need to go farther than spraying. Most of these orchards are too thickly planted, and it is impossible, where the trees are large, to get around them to do the work thoroughly.

The President—Do you mean to say that in old orchards you require to do something more than spraying, in order to do away with spot.

Mr. Fisk—Yes. You want to thin your orchard first, and then prune, and also enrich the soil. Old orchards are, to a large extent, impoverished, and we want to restore them, either by fertilizers, manure or phosphates, I don't know which; but I am satisfied that the properties which have been taken from the soil by frequent crops in old orchards are not going to be restored by spraying

Mr. Brodie—Did you notice any difference where the land was cultivated and where it was in grass?

Mr. Fisk—No, I did not in my own grounds.

Mr. Brodie—I know it is easier to drive over land in grass than when it is cultivated, for when it is cultivated the wheels, in the spring, sink in and break up the soil. I think that eventually, instead of cultivating and spraying, we will have to have our orchards in grass.

Mr. William Craig—I sprayed thoroughly this year, and I had the best crop of fruit I have ever had; but, as Mr. Fisk said, I do not lay that altogether to the spraying, because we had an unusual season. I have faith enough, however, in spraying to go into it thoroughly next year. Usually we have had a fair amount of cider apples, but this year, I am thankful to say, we had none, and we had only a very small percentage of second-class fruit. We have been taking out every alternate tree, cultivating it and manuring it heavily, and top dressing the rest, so that, in a year or two, we shall be able to give a more definite opinion on spraying; but at present we have faith in it.

Mr. Barnard—I think I had better say what was told me by the vice-president of the Pomological Society of France. The apple orchards of Normandy are of very great value, and he told me that he had been visiting some of the old orchards and he found that, as a rule, the people wanted two crops—a very heavy crop of grass and a heavy crop of fruit—which is a difficult thing to get; but there it is a success when plenty of manure is used. The trees want plenty of space, and they must be well trimmed. He also said that it was a custom with the farmers of Normandy to scrape the bark of their trees as soon as they thought there was an insect lodged on it. They spread a linen cloth on the ground, and it was wonderful, he said, to see the quantity of insects and bark that dropped upon it as the scraping proceeded. The tree was then washed with soapsuds, and limed. In this way the Normandy orchards had been known to have been preserved for centuries, and they were still giving heavy crops. The ground, the gentleman told me, was sufficiently rich to produce a heavy crop of grass; but care had to be taken that it did not take all the strength out of the ground. There had to be a double coating of richness, so to speak, so that the tree could have its share as well as the grass. I thought that we might try it here. The gentleman I have referred to, on visiting Canada, found such a supply of fine fruit that samples were sent to France three years in succession. The result was that gold, silver and bronze medals were struck specially for Canada, and diplomas were also sent, thus enabling us to participate in the important work done in France by the Pomological Society. The fruit was photographed and cuts made, and it was also analyzed, and the value of each sample reported upon by the chemists of the Society.

Professor Fletcher—The method that Mr. Barnard mentions has been adopted by some of our best fruit-growers. Mr. Shepherd has adopted it.

Professor Craig—I have been very much interested in the discussion that has taken place. It has in the main, confirmed the results of my own observations during the past year. I am very glad to notice the judicial manner of

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the statements of some of the gentlemen who have spoken. It is not wise in taking up any new work to be too enthusiastic, although enthusiasts are necessary to push it on at the commencement; but for the rank and file, it is well to approach it judiciously. For myself, I am perfectly convinced that spraying has come to stay. No fruit-grower of the future can afford to let the season go by without exercising this preventive measure. During the past year, with the object of introducing spraying in different parts of the country where it had not been practised, a few object lessons were given. Although Mr. Brodie has formed a centre from which information has spread, and Mr. Newman has ably supported him, yet there were persons who either had not practised it, or had not found good results from it. The plan adopted was: An orchard was selected, and the spraying was carried on by Mr. Descarries, whose report has been very favorable, endorsing the general opinion of the value of spraying, as demonstrated by the results obtained by the season's work. In Mr. Chapais' district we had an experiment, and Mr. Verreau has since reported to me that the result was satisfactory, he thinks. With regard to Ontario, I had the privilege last year of giving you a somewhat extended report of experimental work carried on in respect to the Fruit-Growers' Association of that Province. The results were satisfactory; in fact, so satisfactory that the Ontario Legislature saw fit to put a vote in their agricultural grant this year for the purpose of carrying on the work more especially under their own direction. During the past year, about thirty places were carried on under their direction. I went through a part of the districts experimented upon, and the results in almost every case were perfectly satisfactory. I would say, in answer to what Mr. Fisk said about his own orchard, which was sprayed, and those of his neighbors which were not, that it is not always possible to determine the benefits arising from spraying. It is necessary, in order to fully appreciate the results, to pick the apples and sort them. When the fruit is picked and graded, the difference is very apparent as to the relative quantity of Nos. 1, 2, 3, and so on. Mr. Newman has spoken of the good effects accruing from spraying from year to year. If we spray thoroughly one year, we get good foliage, and next year the chances are improved fruit. I am speaking from a practical standpoint. The gentleman who carried on the work for the Ontario Government this year has carried it on for two years on the same trees, and the trees that have been sprayed for two consecutive years give better fruit than those sprayed for one year, and very much better than those not sprayed at all. We must depend entirely upon spraying to get good fruit; and we must not only cultivate, but we must manure amply. I don't know that I can accept fully Mr. Barnard's remarks as being applicable to our conditions. A certain amount of moisture is necessary to bring the fruit up to the mark. The climate of Normandy is different to ours.

Mr. Barnard—It is drier.

Professor Craig—The rainfall is less.

Mr. Barnard—Yes; you have a longer season of growth. Father Labelle' who was here for several months, said that our climate was far superior to that of Normandy.

Professor Craig—I quite agree with that; I think we all do. But, with all due deference to Father Labelle, I should regard it as a dangerous practice to raise two crops on the same ground. The best cultivators in Ontario find that they cannot do it satisfactorily and profitably. In every locality where we have sufficient moisture, with good manuring, we can plant trees and grow grass; but to expect our farmers to practise it would, I think, be a little dangerous at the present time, when we are starting on an era which, I hope, will lead to better fruit-growing. As to spraying, it seems to me that in many cases prejudice is holding fruit-growers and farmers back from practising it. It should be looked at from an impartial standpoint. If any of you are looking at it from a prejudiced and warped standpoint, you should get out of that condition, and give it a fair trial for a year. If you once do the work thoroughly, I have not the shadow of a doubt but it will be continued.

Mr. J. M. Fisk—Have you not found that Fameuse is the most difficult apple to treat?

Professor Craig—There is no doubt that in Quebec the Fameuse is the most difficult apple to grow free of spot.

Mr. Fisk—What about the Rhode Island Greening?

Professor Craig—If grown in good, heavy soil, it does not spot so much.

Mr. Barnard—The question of moisture in the soil is a very important one, not only as regards fruit trees and grass, but crops of all kinds. I have made a study of reports that have been issued lately. Professor Wagner, of Darmstadt, has made experiments on the cultivation of potatoes and other plants, and he has photographed the result, with a view to finding out how far small rootlets would go. I happen to have with me a reproduction of some of these photographs, natural size, and if it is the pleasure of the meeting, I will bring them to-morrow, and they will explain better the question of moisture. Professor Craig may be right in what he has stated; but in France a professor has shown, for the last seven or eight years, that a crop of potatoes can be doubled and quadrupled by making a choice in the varieties.

The President—How would it do to take up the question when we come to the subjects for discussion?

Mr. Barnard—I will be very happy to leave it to you, but I have to leave to-morrow night.

The President—We will finish the question of spraying now.

Professor Craig—There is no doubt that orchard trees, and especially nursery trees, grow much healthier, and are less liable to disease, when grown on the virgin soil. In order to get good, strong nursery trees, the nurseryman has to get out of the old orchard places.

Mr. Roy—By applying wood ashes on virgin soil you have no spot disease?

The President—Will the fact that the tree is growing on virgin soil, and the application of wood ashes, prevent spot?

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The President  
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Mr. Brodie

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Professor Craig—That is a hypothetical question. The very fact of the orchard being isolated from other trees—

The President (interrupting)—Is the orchard you have in your mind, Mr. Roy, when speaking about applying wood ashes on virgin soil, entirely isolated?

Mr. Roy—There are no old orchards within four or five acres. There is no spot on either the leaves or the fruit, which may, or may not, be due to the ashes.

Professor Craig—Mr. Roy's idea is that the virgin condition of the soil is necessary to give healthy trees and fruit; but there is another element in the soil, the original vegetable humus, which is dispersed by plant growth. Without knowing exactly what benefit it is, we know that it has a very advantageous effect on plant growth, and that it gives us healthy trees.

Mr. J. C. Chapais—Do you think that if we manured heavily with ashes such a spot as the Island of Montreal would escape the spot disease?

The President—How is the disease spread?

Professor Craig—It is spread by means of minute seeds, or spores, which lodge on the dead leaves. They live on the young wood and leaf buds, or wherever they can find foothold under favorable conditions. We know they can live from year to year—live in the old apple barrels, perhaps on the apples themselves, and on the wood and bark of everything. The first spraying is one of the most important of the whole season, because, using copper sulphate at that time, we can use it much stronger than at a later period, when the foliage is on the trees. One of the most important things to do is to give the trees a good spraying with copper sulphate in the spring. If you are so busy in the spring, and can do it better in the fall, you will get sufficient benefit to pay you for the work. I think that the best time for spraying is as soon before growth as possible, because you will be likely to destroy a greater number of spores, and then go on with Bordeaux mixture.

A voice—What do wood ashes cost, Mr. Roy?

Mr. Roy—I got a load last year, and they cost me \$10 a ton.

Mr. Brodie—What percentage of potash was in them?

Mr. Roy—I didn't have them analysed, but I took a gallon of ashes and made a gallon of lye, and it was strong enough to spread easily. Over seventy-five carloads of ashes pass through here every season from Ontario. I think they are the best fertilizer a man can buy to put on almost any land.

Mr. Barnard—In Quebec they are very particular to keep the ashes in the stove for six weeks, and in that way they weigh very much more per bushel than if taken away at once. An analysis which we had made at St. Hyacinthe gave a smaller percentage of potash than one made at Lansing, Mich. At St. Hyacinthe no particular care was taken in burning the ashes, and, whilst they showed 7 to 7½ per cent. of potash, those at Lansing showed 11 per cent.



Mr. Roy—The ashes I use are made from hard wood. The better the ashes are, the heavier they are. It is no use to buy them by the bushel, because the heaviest are the best.

Professor Craig—I quite agree with Mr. Roy as to the value of wood ashes. According to an analysis made at the Experimental Farm, their intrinsic value is about sixteen cents per bushel of 60 pounds.

Mr. Roy—I was led to use ashes through seeing them used in New Hampshire. We cannot buy them, however, except through a Boston firm.

Professor Craig—And it is probable that they are shipped from Canada in the first place.

Mr. Roy—Mine came from Ontario, but I bought them through a Boston firm.

Professor Craig—As they cost you about thirty cents per bushel, they should have been a very excellent sample.

Mr. Barnard—Whether Mr. Roy paid too much for his ashes is another question. Ashes are being wasted in Montreal to an enormous extent. They need not cost more than fifteen cents a bushel, delivered at the depots.

Professor Craig—A few years ago I bought them at \$4.50 per ton.

Mr. Barnard—In many places in the country ashes are not thought to be worth keeping. The question of utilizing wood ashes is a most important one. It has been well proved that carbonate of potash is worth more than the muriate, which may be a very poison to some plants. The carbonate gives the potash in the very best form. We have a chemist, who has come from Europe. He is a very good chemist, and he makes a difference of 50 per cent. in value between carbonate and muriate of potash, in favor of the carbonate.

Mr. S. A. Fisher—There are hundreds of bushels of ashes being wasted in every village in the Province of Quebec. Last winter, and for three winters back, I collected in Knowlton from two to three tons of ashes, and put them on my orchard. They did not cost, on an average, \$3.00 per ton. You can find at your own doors a great deal of material that is allowed to go to waste. Canadian wood ashes are being sold all over the United States, and it is a great reflection on our fruit-growers that this should be allowed. We should keep them in Canada, instead of allowing them to be exported.

The President—We have had a most interesting discussion on this important subject. Would any other gentleman like to ask any more questions? If not, I will close the discussion, and call upon Professor Fletcher. Before doing so, however, since Mr. Brodie has made some reference to my views on spraying, I wish to say that I am not opposed to it—since I have tried it. I have tried it for two years, and with very great success. Last year I visited the orchard of Mr. Newman, at Lachine, from whom I purchased a fine lot of Fameuse, and I noticed that the old trees, 75 years of age, which had been sprayed four times, had better fruit by a long way than the trees of the young orchard. The young orchard was probably ten or fifteen years old, but the fruit was not so clean as

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that of the old one. The young orchard had been sprayed once. In the neighbor's orchard, where I also bought apples, and which had been sprayed only once the fruit was not clean. With regard to the application of ashes, I have had considerable experience, for I have been able to get hundreds of bushels of them from our steamboats, and I have applied them freely, with the result that the coloring of the fruit is much higher; the Fameuse are redder, and the red apples generally are better. The ashes have not prevented the spot, but they have made the trees healthy and the fruit of good quality.

Mr. Roy—Were they coal or wood ashes.

The President—Wood; coal ashes would be no use.

Mr. Newman—My experience is that richness of soil rather encourages the spot, as there are more leaves for it to work on. Two years ago the spot was very bad, and my trees in the young orchard were very badly spotted; in fact, the fruit was unsaleable. In the old orchard it was not quite so bad.

Professor Fletcher—Spraying is one of the things that has been practised and advocated for many years by persons who have studied insects. The whole discussion to-night has been in regard to fungous diseases, which shows that this class of disease has attracted most attention among fruit-growers. In the earlier stages of the experiments to prevent disease no success followed the experimentalists. All that was known was that some satisfactory experiments had been made in New Zealand in connection with the coffee plant, by hanging on the boughs small leaden vessels filled with carbolic acid. In 1884 I tried it, but without much success, for the black spot on apples. Next year sulphate of copper was tried, but with no better success. Now nobody neglects spraying, for it has reached such a pitch of satisfactory experiment that it is necessary, for anyone who wishes to get good results, to employ it. It has become a necessity. As to the exemption from disease of trees that are fed with different strong foods, it is simply the same as in the case of animals and man. A man in good health can go into an infected locality and not catch disease. The application of potash simply puts the plants in a good condition of health. But, as in the case of animals, we can give too strong food. Anyone who has ever studied in the line of vegetable physiology knows that you can overdo a thing. A healthy plant will throw off disease; but in times of epidemic it will suffer, just the same as an animal is liable to do under like circumstances. This country is so permeated by this fungus that all orchards are liable to suffer. On virgin soil we have conditions favorable to a good healthy crop; but as to any settled parts of Canada being exempted, it is impossible, because an intervening distance of ten or twenty miles means nothing to the disease. Pollen grains are known to have been blown out to sea, and to alight on a ship 200 miles from land. The spores of fungous disease can be blown a long distance, and, alighting on a tree, they find lodgment. We have heard during the discussion to-night that these fungous spores pass the winter on the trees—on the twigs—so that the first spraying in the spring destroys a large proportion of them; but, at the same time, a large proportion have fallen to the ground and on to the trunks of the trees. If it was not for this there would be no difficulty in stamping out the disease in one season. Mr. Craig has told you that where, in the spring, it is

difficult to cover the whole case, you may begin in the autumn and spray the leaves. With trees that ripen their fruit early, you can spray your trees even at the hazard of losing the leaves. You might begin in the autumn, repeat it in the winter, and begin again in the spring. A solution of one pound of copper sulphate to twenty-five gallons of water would prove successful. The cost is small. Leaves are the stomachs of plants—they have been called the lungs, but they are the stomachs—since it is by them that the plants take in food. Trees lay up nourishment through their leaves to bear fruit the next year. The whole question of nourishment and moisture is one of great importance. I think that the divergence of opinion between Mr. Craig and Mr. Barnard is due largely to the conditions which pertain in the two parts of Canada in which they live. In Quebec the atmosphere is moister than in Ontario. The whole theory of cultivation is simply the agricultural practice of conserving the atmosphere in the soil. In England, where the atmosphere is largely charged with moisture, they have got some sort of an idea that cultivation lets in air, but in Western Ontario, and the drier parts of Canada, it is absolutely necessary to keep the moisture in. I can quite conceive that cultivating would be of far more value in Quebec than in Ontario, and especially in Mr. Barnard's part of Quebec, where it is essentially a mountain climate, with damp atmosphere. He is near the lake, the air is moist, he has a large quantity of moisture available, and he can grow two crops. He gets very much the same conditions, I think, as are to be found in England, and as must be the case in Normandy. Although it may be dry and hot during the summer, I think all parts of France must be more heavily charged with moisture than is the case here, where we are so far from the sea. In England it is no uncommon thing to see the fields so cracked that you can put your fingers down the cracks, but, at the same time, the atmosphere is moister than ours. In Western Ontario, where they grow Indian corn, it is necessary to keep in the moisture. In Manitoba they start with only just moisture enough, and they lose a large proportion of it by evaporation by the plants. In growing heavy orchard crops all horticulturists say that you must keep the land clear and cultivate it freely. Along the Fraser River, at Lytton, B.C., I have seen the best fruit that I ever saw grown in Canada. It was grown under irrigation, and the gentleman who produced it also grew clover as a mulch for his trees. The question of isolation draws attention to the minute size of the spores and a remedy against their attack. We cover the surface we want to protect with something that is poisonous to the parasite, and if we spray early we prevent a loss that could not otherwise be avoided, for early spraying is the most effective. But it must be repeated, because when a spore attaches itself, if proper measures are not taken, the tree is destroyed. The effect of spraying is thus a preventive one, and it must be done early, so that the trees may be protected.

Mr. Brodie—I have noticed for several years, especially when there is a thaw during the winter, that the trees are capped with ice, and coming on to the spring, the branches are as clean and bright as if they had been washed, showing that the frost and rain have been cleansing them. If a spraying mixture was applied in the fall, I think much of it would be washed off.

Professor Fletcher—It would have done its work.

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Mr. Brodie—I think it would be a waste of work to spray the trees in the fall, when the spring would do just as well.

Professor Fletcher—The cost is simply that of one pound of sulphate of copper to twenty-five gallons of water, and the work is done at a time when labor is very cheap.

Mr. J. M. Fisk—You cannot do winter spraying, unless you choose a very mild day.

Mr. Barnard—There is a great danger of the trees being injured by the frosty material falling down and carrying away the fruit buds. The spring spraying might have that danger too, but I think the idea is an excellent one. I spoke a little while ago about the reports published in France of fruit grown in Canada, and as the pamphlets are of very great importance, I will try and secure them for you, so that your Publication Committee can see whether they are worth reproducing or not.

The meeting then adjourned until the morrow.

TUESDAY, 13th, 1896.

#### MORNING SESSION.

The Society met in the Council Chamber, Fireman's Hall, at 9 a.m., the President in the chair.

The President said: I am sure we shall be very glad to have everybody here become members of the Society. It only costs \$1 a year, and you have a selection of fruit trees or plants to choose from once a year, as well as receiving the annual report of the Society, which is printed in both French and English. We shall be very glad to have attending our meetings everybody who takes an interest in either pomology or horticulture.

Mr. Barnard—I would suggest that the Society take advantage of a trip that Mr. Newman is going to make to England and France, and should give him a letter authorizing him to take all the information he can get, and to report at our next meeting. He has only a short time at his disposal, but credentials can only have a good effect.

The President—I think it is a very good idea.

Mr. Chapais seconded Mr. Barnard's suggestion, which was then put to the meeting in the form of a motion, and was unanimously concurred in.

The Secretary, Mr. W. W. Dunlop, read the minutes of the last annual meeting, which were unanimously adopted.

The Secretary also submitted the financial statement, and explained that it would be necessary to appoint an auditor to go through it.

On the motion of Mr. Chapais, seconded by Professor Fletcher, the President was appointed to act in the capacity of auditor.



Mr. Fisher reported on the interview which the Committee had with the Commissioner of Agriculture regarding farmers' clubs. He said: The Committee interviewed the Commissioner after the meeting at Quebec last winter, and suggested that either the Council of Agriculture or the Department of Agriculture—we did not quite understand under whose authority the matter would come—should arrange that every farmers' club in the province should be required to become, by one of its officers, connected with this society, so as to secure, as far as possible, the distribution of the information obtained at our meetings among the people. Our reports would then go into the libraries of the various farmers' clubs, and we should attain a large membership all over the province, thereby extending interest in our work, as well as information connected with it. The Commissioner seemed favorably disposed towards the idea; but, on consultation with the Deputy Commissioner, they seemed to think that it was impossible to bring it about, as farmers' clubs were already required to do certain things, and if further requirements were demanded of them, only trouble and difficulty would be created. The result has been that nothing has been done. I still think, however, that our views were not only in the interests of the people, but that they were practical, and I believe that they could be carried out if the matter was gone about in a determined way. The Deputy Commissioner especially seemed averse to the project, and to think that it was impossible. So far as I am concerned, I have heard nothing further in the matter,

The President—I have had no further communication, except conversation with the Deputy Commissioner, who does not see a way clear to legally arrive at the result we desire.

Mr. Barnard—I think there is a way. We found some difficulty respecting syndicates. We formed a farmers' syndicate. It was important for the clubs that they should be in communication with the syndicates, whose organization was purely a benefit to the clubs. We had some difficulty in making an organization by which they would be bound to become members of syndicates, so, instead of forcing them to do so, we offered that, if they would subscribe ten cents per head of membership, they should receive all the advantages of the syndicate. With this society the difficulty would be to give every member a copy of the report, if it had to pay for the printing of them itself; but since the Government pays for it, we might offer the clubs all the advantages of our society, except that of direct membership, provided that each member, through his club, paid ten cents a year. It worked well for the syndicates, and a larger membership was obtained than would otherwise have been the case.

The President—I will now nominate committees, viz.:—

Nominating Committee for the Election of Officers—Messrs. E. A. Barnard, J. M. Fisk and R. Brodie.

Committee on Resolutions—Messrs. J. C. Chapais, C. P. Newman and S. A. Fisher.

Committee for Examination of Seedlings—Professor Craig, and Messrs. R. Brodie and J. M. Fisk.

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The President (to the Secretary)—Have you made any provision for the cold storage of the seedlings?

The Secretary—We shall have to take them into Montreal, I suppose, and store them until May 1st, when the prizes will be awarded.

On the suggestion of Mr. Fisher, it was understood that these seedlings should be examined monthly, until May 1, and their condition reported upon.

#### DISCUSSION ON COLD STORAGE.

The President—We will debate the question of cold storage now.

Mr. Brodie—In regard to the trial shipment that was sent to the Old Country, I believe a car load of western fruit—grapes, plums and peaches—was sent to be shipped with the apples; but Mr. Newman's fruit and my own were the only paying shipments in the whole thing. The rest were a total loss, and for the reason that, when they arrived in Montreal, the refrigerator car in which they had come from Ontario contained no ice; it had melted on the way. I have shipped fruit for years—Alexanders and St. Lawrence—in barrels, and they carried just as well as in cold storage. I do not look upon the trial shipment last year as a success at all. We should try something like the Duchess, which, when almost ripe, will color on the voyage. Alexanders will ship any way, under careful conditions. A year ago last summer I sent twenty-five barrels of Alexanders to Glasgow and ten barrels to Liverpool, without any cold storage. The Glasgow ones netted me \$2.75 per barrel; the Liverpool ones \$4. The difference, I think, was owing to the fact that it is a longer voyage to Glasgow, and most of the ships going there carry lumber, and are delayed four days unloading the lumber before they discharge the other cargo.

Professor Fletcher—Were the Glasgow ones in a worse condition than the Liverpool ones; or, was it due to the market?

Mr. Brodie—It was not explained to me. However, \$2.75 was a better paying price than I could have got in the Montreal market for them. The report on cold storage does not bring up the point of putting apples in cold storage in Montreal. There are several companies there who take in perishable fruit. In the summer, when the local commission men get a consignment of, say, pears, and the market is glutted, they put them in cold storage for a couple of weeks or so, until prices are improved. Our fall apples are so cheap that it would hardly pay, to put them in cold storage. I think fifteen cents a barrel is the price charged for the first month, but, perhaps, for a longer time they could be stored at a little cheaper rate. I think it would hardly pay, when apples are selling cheaply, to put them in cold storage; it would be more profitable with pears, peaches or some other fruit.

The President—The report says: "The whole netting \$1.08 per box, or \$3.25 a barrel net." Does that mean the cold storage freight included; or was there any extra freight for cold storage?

Mr. Brodie—The Government paid for the storage.

The President—That is not a fair test. If you shipped in cold storage on your own account, you would have to pay extra freight. In reference to Mr. Brodie's remarks, I agree that it is possible to successfully ship Alexanders without cold storage, and also Duchess. In '94 I shipped, at least, fifty boxes of Duchess to Liverpool and Glasgow. They paid me better than Wealthies or any other fruit that I shipped later. They arrived in the English market at a time when fruit was scarce, and they arrived in splendid condition. I wrote to my agent in Liverpool to cable me as to their condition on arrival. The fruit was picked when not quite ripe. The Duchess will color after it has been pulled. The agent cabled me: "Arrived in excellent condition, and sold at auction at 12s 6d." My box hold  $1\frac{1}{4}$  bushel. The agent also cabled: "Keep on shipping until further notice." I did so right through the season, but I didn't net anything like that—about 5s. a box—but these were not the Duchess. At 12s 6d. a box, they would net me \$3.60 per barrel. I consider, as I could not in '94, get more than twenty-five cents for a bushel basket in Montreal, that I was much better off by shipping to England. If I have a good crop of Duchess next year, I shall make some effort to ship them without cold storage.

Mr. Brodie—Captain Barclay, of the Allan Line, told me that when apples were stored aft in a ship at the water line, it was as good as any cold storage. From my experience, I would not recommend anyone to ship St. Lawrence, they are not wanted. The people in the Old Country have got good teeth, and they like an apple that meets their teeth well. I sent twenty-four barrels of St. Lawrence and Red Streaks, and I had a poor apple that was hard to dispose of here, so I put an odd barrel of them on board, to make up twenty-five barrels, and I got more for them than for the St. Lawrence, which were not appreciated at all.

Mr. Barnard—I am afraid, Mr. President, that we have not very much information on the question of the best kind of cold storage for shipping purposes. Here is a case of cold storage of fruit from Ontario which came without cold storage to Montreal. Ice had been put in the car at the start, but there was none when it reached Montreal. Cold storage with ice is a miserable kind of cold storage, because it brings on dampness, which is, perhaps, more dangerous than heat. I think we should name a committee to find out what has been done in Australia, where they have forty days' ships to England, and have to cross the hot waters of the tropics, and yet their fresh meat, delivered in the English market, sells at a remunerative price. I am very much surprised that, after fifteen or twenty years—cold storage in the experimental stage was going on twenty-five years ago—we, with cool water between us and England, know very little about cold storage. It is a shame for Canada that Australia should have been beating her on the English market.

Mr. J. M. Fisk—Is it possible to ship fruit in connection with dairy products?

The President—I will ask Professor Craig to speak to us.

Professor Craig—I hardly know where to begin, the subject being so large. I will take it for granted that you know the arrangements which have been made by the Dairy Commissioner for carrying on the work next year.

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The President—No.

Professor Craig—The idea is that weekly shipments of beef, mutton, poultry and fresh meat products shall be sent to be killed in Montreal, and then be put on board vessels having cold storage compartments, not depending on the temperature of the water, or anything of that kind, but cooled by mechanical means, and thus have a temperature which can be held at a certain degree of cold.

Mr. Barnard—And no dampness.

Professor Craig—A perfectly dry atmosphere. With regard to the shipments of fruit made last year, an explanation, I think is due to myself and it would be of interest to you in showing why it was not successful. The Ontario Fruit-Growers' Association were anxious that the Government should take up the work; they thought it was only right that something should be done for them, and a deputation waited on the Government and urged them to make some trial shipments. The then Acting Minister of Agriculture, Mr. Angers, pointed out that no special money had been set apart, and that a vote could not be diverted from the original object for which it was intended. He was, however, willing to take the responsibility of allowing a shipment of fruit to take the place of a shipment of butter, or, perhaps, two shipments; but he had no power to set money aside for putting up special compartments for carrying fruit over. If they wished to accept these conditions, they could. They thought it would be a good idea to do so, in order to get the thing started, and the Minister of Agriculture authorised me to see to the collection of the fruit and the packing of it. The shipment was composed of pears, peaches, plums, tomatoes and early apples. Most of the apples came from Montreal. I had special cases constructed, and each specimen of fruit was wrapped separately in paper before being packed. The cases were put in a refrigerator car, which was iced and sent forward to Montreal. Unfortunately, the transporting company did not keep the car thoroughly iced *en route*, and when it arrived at Montreal, the ice had disappeared, and the fruit was somewhat heated. I had nothing to do but send the fruit forward, and it arrived in Liverpool in bad condition, owing to the fact that it had become heated, and had melted the ice in the car. We can ship fruit in two ways—at a moderate high temperature, if it has been well picked at the right time, and properly handled, and shipped in ventilated compartments on board steamer. We can do this at a temperature of 45° to 50°, and have no difficulty in placing on the Liverpool market the Duchess, St. Lawrence and other apples of that character. On the other hand, you can carry the fruit in perfectly tight compartments, if you have the temperature low enough. The idea is that a change in the make up of the apple will take place by the germs of fermentation working when the temperature is high enough to enable them to do so. If you have a temperature of 45° to 50°, you must have good ventilation to keep the air agitated and pure all the time else the fruit will generate sufficient heat to produce decomposition much more rapidly than would otherwise be the case. Where you have a closed compartment you must have a lower temperature, so that the fruit is dormant. I do not know what system will be adopted next year, but I have been advised by the Minister of Agriculture that it is altogether probable the work will be carried on next year more extensively



than in the past, and we shall endeavor to get as much information as possible with regard to the best means of carrying the fruit over, disposing of it, and the best varieties to ship. If the fruit-growers of Quebec take an interest in the work I shall be glad to co-operate with them in every way possible to help them to dispose of the large quantity of more or less perishable fall fruits that are grown in the province, and which cannot be disposed of advantageously on the domestic markets. With such systems of cold storage as can be introduced, we shall be able to dispose, with profit, of many of these perishable articles now grown.

Mr. Newman—Has the Government decided anything in the matter.

Professor Craig—The scheme is not thoroughly outlined; but if the next scheme is taken up, and I think it will be, it will then be an easy matter. The same machinery can cool the meat and the fruit, for the mechanical arrangements are so fixed that different temperatures in different chambers can be maintained.

Mr. Barnard—I am glad to have heard Professor Craig's opinion on cold storage. The question of fermentation is a new one. Butter ferments are entirely different from those of cheese and fruit. The question of cold storage is not the whole question, for ferments under damp circumstances will bring rot, no matter how cold the atmosphere may be. We know that from Pasteur's discoveries, cold storage will be useful only so far as the air is kept perfectly pure and dry. It is very important to know that dampness will be put aside entirely, and cold, dry air secured. Until we have that, we shall have no proper system of cold storage. It is a perfect success with Australian goods.

Professor Craig—California has been working for the last three years in shipping peaches, pears and plums to the Liverpool market, and she has gained a great deal of experience that we can make use of in the initiatory steps of this work. In the past season her success, with the exception of one shipment, has been complete. By using compressed air, and robbing the atmosphere of its moisture and heat, we shall be able to get surroundings that will be right for carrying our fruit to the British market.

Mr. Roy—What seems to be wrong is the moisture. I have an idea that it can be got rid of. This year I have been saving green clover with lime. With about 43 tons of green clover I mixed about 45 bushels of green slacked lime, and I find that the cattle will eat it better than anything that is dried up. A farmer who has a lot of ground tried it on some of his potatoes, and every bushel of them is sound. He thought it might injure the taste, but it has not; the taste is perfectly good. I have no doubt that it would answer with apples. I don't think anybody has tried it.

Mr. Barnard—In France it is quite a success with grapes.

#### FROST AND SHELTER-BELTS FOR ORCHARDS.

The President—There are two subjects down on the programme for discussion, which, I think, might be taken together—"The Influence of Frost on Fruit Blossoms," and "The Use and Abuse of Shelter-Belts for Orchards." I think Mr. Dunlop has had some experience in this line.

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Mr. Dunlop—I think the question about frost is asked with a view to finding out if any means can be taken to prevent damage being done to fruit blossoms. Last year we had some very late frosts, and probably the damage done to our blossoms was greater than for many previous years. I was always under the impression that the varieties which blossomed earliest were most injured; but I found, and particularly with plums, that those which blossomed early escaped better than those which the frost took during their blossoming; that is to say, the larger and stronger growing varieties, which had set their fruit well, escaped with little damage, and those where the fruit had not set were most injured. I think we all suffered from frost last year to a greater or less extent; even the apples in some counties were hurt. With regard to the situation of orchards, I found that a very few feet of elevation served to save varieties which suffered in a lower situation. It has been suggested that we might save our blossoms by smoke, by lighting smudge fires on frosty nights. I have no doubt if it were not too windy, it could be done to a greater or less extent. But, generally speaking, we have let things take their course. There is no question about the effects of smoke. If we had small smudge fires, we could avoid a great deal of damage to apples.

Mr. Barnard—There is very little wind on a frosty night. It is not a fire you want, but a creation of smoke.

Mr. Dunlop—If you have a regular fire, it consumes all the smoke; you simply want it smouldering.

Professor Craig—I was quite interested this spring in noting the effects of frost on blossoms of fruit. The only variety injured at Ottawa was the Wealthy, and the only blossoms injured were those that had just been fertilized. The injury was noticed on the fruit by the presence, when the fruit was about half-grown, of a layer of a sort of corky matter, and which had the effect of quite distorting the natural form of the apple. If you examine, you will notice the outer layer of organs, representing the male portion, are raised on the receptacle, and it seemed just about here that, with us, the frost injured it. The cold was not sufficient to injure the ovary; but it did injure the portion upon which the stamens rest, and the injury was manifested by the effort the apple made to repair it by the deposition of this thick corky layer over the skin of the apple. In Ontario the same effect was noticed on pears, and especially on Bartletts, the lower half of which was covered with a deep rust, and also, to some extent, on Flemish Beauties. I had specimens of these pears sent in from different localities, the persons who sent them asking what new disease it was that had attacked them.

The President—It was attributed to spraying by some.

Professor Craig—But as the pear hung down, it was at the other end, where the spray did not strike it most heavily. Just after fertilization, when the petals had fully opened, the effect was greater; if before the enclosing petals had opened, the blossoms were not injured. That was the result of my observations at Ottawa. With regard to preventing frost by smudge, although the results of experimenters in France have been encouraging, it was a very live and burning question (without making a pun) in Manitoba some years ago,



and was thoroughly tried by our superintendent at the Indian Head farm. You know the immense interest at stake with farmers there. Just when wheat is ripening, three or five degrees of frost mean all the difference between success and failure. It was said that smudge would prevent injury. Mr. Mackay, our superintendent, tried it very thoroughly, but—and I think Mr. Fletcher will bear me out—his results were entirely negative. He had thermometers in the midst of the smoke, not near enough to be affected by the heat, and the temperature did not vary at all.

Mr. Barnard—The idea is not to heat the atmosphere.

Professor Fletcher—To radiate the atmosphere.

Mr. Newman—I should say it would be easier in an orchard.

Professor Craig—Oh, yes. I am only giving Mr. Mackay's conclusions, and he has entirely given it up. In France, I believe, they have had some beneficial results.

Mr. Chapais—If there is a heavy frost, smoke won't have any effect.

Professor Craig—You will notice certain portions of a farm are affected by frost whilst others are not. The portions affected are those where there is no air drainage, where the air cannot play back and forth and agitate the atmosphere. Fruit-growers should remember that.

Professor Fletcher—Smudge was largely used three or four years ago in the Northwest for protecting grain fields; to-day it is not used at all. The difficulty is, where you have frost you generally have a very still atmosphere, and it is then utterly impossible to get the smoke to form that protecting cloud which would prevent radiation from the soil, and, therefore, keep the temperature above freezing point. It is simply a matter of temperature; if it gets down to freezing it will do injury. The question of the degree of frost, whether 2° or 5° has never been settled. Last year I don't think it went lower than 2°, and yet the accepted theory is that 5° is necessary to injure wheat. As to when the blossoms are most susceptible, I think, probably, it is just before they have been fertilized, when the stigma is covered with an exudation of moisture; and it is probable that these flowers are killed and did not bear fruit. Those cases Mr. Craig speaks of as having resulted in rust, were those where the stigma had not been fertilized. That part of the fruit which was at the top of the receptacle at that time was rushed and showed injury; but directly the stigma is fertilized it dries up. If you can prevent a flower being fertilized it will last much longer than one that is fertilized.

Mr. Chapais—In my district there is a swamp, and every year the farmers burn some of it out, in order to make new land for cultivation. Last year they lighted the fires about May 15th, and when the late frosts came the fires were burning and the smoke was sinking down and making a cloud six or seven feet high. In all orchards within that belt of smoke there was an abundance of plums and apples; but on the hills, where the smoke did not reach, there was nothing. That is a fair example of what smoke can do in a very light frost. Where there are only one or two degrees of frost, I think that smoke would be very beneficial.

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Mr. Barnard—I would suggest that as we have so much sawdust going to waste, we might have fires of it prepared in our orchards. By putting coal-tar on it, we could get the requisite quantity of smoke at a cheap cost.

Mr. Brodie—It is quite customary around the Island of Montreal for gardeners to use smoke to prevent the early frosts injuring the vegetables. One gentleman who had about three acres of tomatoes used smoke extensively for three nights running—he did not go to bed—and he had tomatoes on the market before anyone else almost, and he realised from \$3 to \$4 a basket for a good many of them.

Professor Craig—I made some observations last spring with regard to the temperature necessary to injure fruit blossoms, and I found that apples would stand more frost than I had thought. It took  $5^{\circ}$  of frost to injure the Wealthy blossoms at the stage I have already mentioned. We had frosts before that, but the blossoms had not opened, and in that stage they would stand more than  $5^{\circ}$  of frost; but after they have opened, I think  $4^{\circ}$  or  $5^{\circ}$  is sure to either kill or injure them. As to grapes, I think  $2^{\circ}$ , or even  $1^{\circ}$ , will not only injure the blossoms, but the young growth of grapes as well.

Mr. Ball—What about pears?

Professor Craig—The pear is not so much affected.

Mr. Brodie—On the Flemish Beauties grown among my Fameuse apples the bloom came out and got set before the frost came.

Mr. J. M. Fisk—An instance came under my observation last spring which Professor Craig might, perhaps, explain. In our neighborhood there is a ridge on the south-east side of the mountain, and during the early frosts in May the fruit in the orchards in that locality was entirely destroyed. On the western side of the mountain it was not destroyed, but it was thin. Would the want of fruit be due to the fact that these orchards, being exposed on a ridge, were struck by the sun early in the morning, before the frost was off?

Professor Craig—I think so, most undoubtedly.

Mr. Fisk—We all know that vegetables which have been frozen and are struck by the sun early in the morning always show the effect. I attribute the fact of these orchards having no fruit to that cause.

Professor Fletcher—You can prove that by plants in gardens by covering them with a newspaper, so that the sun does not get at them, and the thawing-out is very gradual.

Mr. Brodie—We noticed that the bloom on the St. Lawrence did not come out so early as the Fameuse, and we had a heavy crop.

Mr. W. F. Halcro—You all remember that the first of May was very warm, so that the vigor of the tree was in its full force when the frost came on us. As my orchard is situated, there is a hedge on the north-western side, formed by a number of wild trees of different sorts, ash elm, and so forth, and on the

northern side as well. In observing my fruit, I found that the blossoms were more affected on the Fameuse, which was only a small crop. The Duchess was not affected at all, but bore a heavy crop.

The President—And the St. Lawrence?

Mr. Halcro—They were affected as well as the Fameuse; but the other fruit did not seem to be affected at all. I think the wind appeared to come more from the north that evening, so that my trees were partly sheltered from it. I think if the northern side of orchards was protected, it would be beneficial. Plum trees were growing in the same place, and they did not seem to be affected at all.

Mr. Fisher—I had a number of varieties of plums in full blossom at the time of the frost, and they were absolutely destroyed.

Mr. Halcro—Were your trees protected?

Mr. Fisher—No, the plum trees were all open.

Mr. Halcro—I had some plum trees which were not protected, and I had the same result as you.

Mr. Fisher—One or two things I observed were peculiar. I noticed that on some of my Duchess the leaves and blossoms were all black. I tied some string on these trees so as to mark whether they bore fruit or not; they all bore good fruit. My Fameuse were somewhat hurt; but neither the Wealthies nor the Longfields seemed hurt at all. The Duchess might have been slightly hurt, but it was very little. I had as many apples on the trees as there ought to be.

Mr. Halcro—My Duchess were overloaded.

Mr. Fisher—I don't think my Duchess had quite as many apples as usual; but though the blossoms were black, the trees bore fruit.

Mr. Newman—Does spraying in the early morning save a few trees?

Professor Craig—I think it would have the same effect as sunlight. The injury to plant tissues is brought about by the sudden withdrawal of the frost. When it freezes, the particles of moisture between the tissues are changed into ice, and, that expanding, bruises the tissues. If the frost is gradually withdrawn by the return of heat, sometimes there is not very much injury, but if it is suddenly withdrawn, there is a collapse of the tissues, and we have brown portions. Peach-growers in Michigan and Ontario do not fear cold weather so much as sudden changes, and it was just this condition, I have no doubt, that was the reason why, on the north side of Yamaska Mountain, the fruit was not injured. As to shelter-belts, I think an important point is to get an orchard where the climatic conditions are as equable as possible. For myself, if I were planting an orchard, I believe I would put a shelter-belt on the south and west sides, in preference to the north. I think it would not only protect against the prevailing winds, but it would give an evenness of temperature which would be more advantageous to the orchard than if we had the shelter on the north side, where it would favor greater heat than on the south. But these are questions which growers have had experience of.

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Mr. D. Westover—My orchard, about twenty-five years ago, was planted with a south-western exposure, and I also planted a cedar hedge on the western side. Wherever my trees were shaded or protected from the frost, I got no fruit; but on the rising ground I had good fruit. The nearest to the shelter were Fameuse and St. Lawrence, and I got no fruit; but of Red Astrachan I got a heavy crop on the high ground.

Professor Craig—Do you think it was a matter of elevation, Mr. Westover?

Mr. Westover—My experience has been against any protection whatever; let your trees have the full benefit of the winds.

Mr. Barnard—We have old orchards at Beaupre, and I am much surprised to see that the oldest and best trees were exposed to the early sun and to the noonday sun, and were protected on the north side. I could not explain how it was that the fruit was so good and kept so long; but observation led me to think that the ice, which remained on until the last week in April, and gives us a cool current, protects the trees from the bad effects of the sun. We are on the edge of the St. Lawrence, at an elevation of 150 or 200 feet, and I think we are protected by the cold wave, which lasts until the ice has gone, and possibly, the moving air is a protection of itself.

Mr. A. Johnson—Would spraying in the morning be a preventive? Last season I sprayed before the sun rose, and also afterwards; especially in plums, of which I had a fine crop. The trees were in full blossom at the time. I also sprayed the cherry, and I had a nice crop. I believe that had I not sprayed the trees thoroughly when the sun was rising, I should not have had the same crop. I had the honor of winning first prize for plums, and I believe that the spraying was accountable for it.

Mr. Ball—What time did you spray?

Mr. Johnson—Before the sun rose, and I kept on at it.

Mr. Ball—Was the water cold?

Mr. Johnson—As cold as we could get it.

Professor Craig—It is just a matter of the particular condition in which the blossom is when the frost comes. With regard to Mr. Johnson's spraying, it was on a different line to what Mr. Newman suggested. Mr. Johnson followed up the spraying, giving a much cooler condition than the sun would have furnished, and he started early in the morning.

Mr. Johnson—I didn't remain at one tree all the time, but was on the move.

Professor Craig—And using very cold water.

Professor Fletcher—It is well known that when tender plants are frozen, if you use water that is not too cold, there is always a probability that the temperature is going to rise very soon, and it will take out the frost very slowly. If you water when your plants are freezing, you do them a great deal of harm; but if you do it in the morning, when the temperature is going to rise, you put on water that is just a little higher than the frost, and, the higher temperature coming soon afterwards, enables them to go ahead.

Mr. Johnson—I experimented on a Johnson Sweet, of which we had some five or six trees. I took pains with one tree; we took four barrels of apples from it, and not one from the others.

Professor Craig—How long did you keep up the spraying?

Mr. Johnson—Oh, probably, six or eight applications.

Professor Craig—The same morning?

Mr. Johnson—The same morning.

Professor Fletcher—You don't want to do it before daylight; you want to do it with daylight, but before sunrise.

Mr. Johnson—I did it an hour before sunrise, and also an hour afterwards. The same morning my mother saved over a hundred tomato plants by watering them.

Mr. Brodie—I was unfortunate enough to get a good many of my tomato plants frozen on the frames. I watered them and shaded them, but it did not save many.

Mr. Barnard—They were too tender.

Mr. Brodie—I watered them, but didn't let the sun get at them. As to hedges round an orchard, I don't approve of shelter whatever, unless to protect from a very high wind in the fall, when some varieties of apples are liable to be blown down. I had a willow hedge extending about three acres alongside one of my orchards, but, fortunately, I have got it cut away. It was a regular bed for breeding insects, caterpillars, and so forth, and the apple trees were more subject to spot. There was not a sufficient circulation of air, on account of the hedge keeping the wind from blowing through the trees.

Mr. Chapais—A willow hedge is the worst you can get. It will send roots a distance of fifty and sixty feet, and will deplete the soil, until it becomes like dry sand. It will almost uproot your apple trees. I saw a willow in the Parish of Varennes, one root of which had grown into a crevice in a chimney, and the house was broken in two.

Mr. Barnard—I would be sorry if our report would be dead against all protection for orchards. In some parts of the province the want is so strong that it would be impossible to have fruit without protection. It is an excess of protection we find fault with. Travelling in the Saguenay district, I found there was no protection; the earth near Tadousac had been carried bodily away, to the depth of about three feet, by the wind.

Professor Craig—Do you anchor the trees down?

Mr. Barnard—No; a very small belt all round will keep them.

Mr. Newman—Going back to shelter-belts, last year I noticed an orchard that was protected on four sides, and on a calm day the sun made something

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like a hotbed out of it. The fruit ripened without color, and that which was hand-picked had poor color. Where shelter interferes with air circulation you pay very dearly for it.

Mr. McFarlane—In our orchard last season we found on the north and west sides, where there were no other trees near, that we had good apples. The Wealthies proved the best we had. On the other side, where the trees were close together, and didn't seem to have air enough, we had less fruit and more spot. I think we must have a circulation of air to dry the humidity. Some of the Fameuse were spotted where they were too close together; where separated we had good results. Our Wealthies were loaded to the ground; some of them even broke down, and had to be propped up. It was a beautiful sight to see the apples and the color, especially if the trees were not too close together.

Professor Fletcher—Shelter-belts is the subject of discussion. What are they supposed to be a shelter against? Sudden cold? Some apples will grow in some districts, and not in others. I think shelter-belts against the north winds would be valuable. Then the question comes, which is the best shelter-belt? The matter of the stagnation of air goes against common sense. No one should plant anything round his orchard so that there is not a proper circulation of air. I think that shelter-belt means a protection against the winter. I think they are useful. With regard to the willows which have been mentioned, out of 280 different kinds of insects that feed on apple trees, I don't think that half a dozen feed on the willow as well. Nearly 300 feed on the apple, but not a dozen feed on the willow as well, so the insects would not spread from one to the other.

Mr. Chapais—The tent caterpillar will do it.

Professor Fletcher—Oh, yes; it will feed on hundreds of plants, probably. The mistake made in Manitoba was that the people got into the valleys, where there was no air, and where they got frost.

Mr. Johnson—What do you propose for a shelter-belt—a common board fence, five or six feet high, or a hedge?

Mr. J. M. Fisk—A hedge of cedars is about as good as anything.

Mr. Johnson—Is it the tops of the trees that want shelter, or the trunks?

Professor Craig—If I were going to put down a shelter-belt, I would put it on the south side; but if I were going to plant an orchard, I would not put one down. I don't think we can expect to grow it satisfactorily by giving any kind of shelter; I don't think it is a wise thing for us to expect, although we can nurse certain tender varieties. Cold affects trees in such a manner that we cannot expect to get away from it by giving them any kind of wind-breaks. They can stand a certain temperature, and when below that, they die, and we are not going to save them by shelter-belts.

Mr. Barnard—I would like to ask Mr. Chapais, who represents a district identical with the one I do, why we want breaks.

Mr. Chapais—In the eastern part of the province we are different to the western part, and we absolutely want wind-breaks during the whole of the year. In winter, and especially such a one as this, when in December we had heavy rains, followed by heavy frosts, we had ice on the branches of the trees, and these rains were followed by very high winds, which would have broken off every little twig and left only the trunks of the trees, if there had been no shelter. In the spring the north-east wind comes very freely through the Gulf, and when your trees are in blossom you have very high winds, carrying everything before them, and preventing the pollen being deposited on the stigma and fertilising the flower. Later, in August, when the fruit gets a little size, the wind will take off everything, if you have no wind-break, and, later on, when you are looking for the color on your fruit, the wind will play havoc again. It is for these reasons that, from Three Rivers to Baie des Chaleurs, we absolutely want breaks against the wind. It is not a question of either frost or cold in the spring, but it is a question of preventing the wind breaking the orchards. In some places shelter-belts may be bad, but in others, they are absolutely necessary.

Mr. Fisher—In the Eastern Townships I think in many situations that wind-breaks would be very beneficial. I don't mean that an orchard should be closely surrounded by a tight hedge, but something far enough away to allow the circulation of air, but at the same time prevent the general sweep of the wind across the orchard. I consider that the position of the wind-break should have reference to the prevailing winds of the district. I would not like to say that it should always be to the south or to the north; it should be to the windy side of the orchard, but far enough away to allow that circulation of air which is needed.

#### PEAR CULTURE.

Mr. R. Brodie contributed a paper on "My Experience in Pear Culture." He said:

The old saying, "He who plants pears, plants them for his heirs," will not do for the present time, for we can get Flemish Beauty to come into bearing five years from time of planting.

When a little boy, I remember a few large pear trees in our orchard that were loaded with White Doyennes. They were medium to large in size, surface pale yellow, often a faint blush, stalk about one inch long, flesh of very fine texture, melting, rich and excellent. We have had Flemish Beauty, Bartlett, and a few other varieties bearing, but I have never seen any pear to equal these White Doyennes in quality; they were the last of the old stock set out by my grandfather. The last one died about fifteen years ago. The oldest tree we have at present is a Flemish Beauty, about 30 years old, measures 33 inches around the trunk, is 25 feet high. The great wind storm of 31st December last, blew half of the tree down, so I fear its days are about numbered.

For commercial purposes I would not recommend any other variety than the Flemish Beauty, they seem to be as hardy as the Fameuse apple tree, they bear heavy annual crops.

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The late Mr. J. H. Springle, in his valuable essay on pear culture in the Province of Quebec, published in the report of the Montreal Horticultural Society for 1876 the following: "In setting out pear trees a southern or southeastern gentle slope at the base of mountains answers admirably, and shelter if not existing, should be provided against the coldest winds of winter, by planting a close border of evergreens." This plan was tried by the late Charles Gibb, Esq., of Abbotsford, and proved almost a total failure. I believe the cause of the trees dying was that they had too much shelter, the air did not circulate enough. Most of my bearing trees are growing among apple trees. Then again 100 trees, Flemish Beauties, planted 5 years ago, out in the open field, without *any* shelter are as healthy as I could wish them to be. The trees were low set, branching about 2 feet from the ground. I particularly told the nurseryman not to send me any grafted on the quince stock, but I find quite a number grafted upon the apple stock.

I set out these trees on clay loam with sandy sub-soil about 15 by 20 feet apart, growing a vegetable crop between and manuring heavily. Some of these trees had quite a few pears last year.

In a Fameuse orchard, where here and there a tree had died, I put in the place pear trees, mostly Flemish Beauty. Planted these in the sod and top dressed with manure every spring, they are doing as well as those in the cultivated plot. When trees come into bearing they need heavy manuring, either with commercial fertilizers or barn yard manure. I use both.

Next to the Flemish Beauty I like the Beurre d'Anjou it seems as hardy as the Flemish, growing side by side, but I have only had them bearing on a top graft.

I have had the Bartlett bearing for the last twenty years, the tree is fairly hardy and the young growth has never been killed back even in the severest of winters.

Wilder's Early, planted three years ago, are growing well, a graft set upon a wild pear, had about a dozen pears last summer, they were as close together on the branch as they could stick.

The Idaho made a similar growth to the Bartlett, some call it the fall Bartlett.

Sheldon, Clairgeau and Souvenir de Congress have stood the last three winters and made a very healthy growth, not killing back a bud.

I was disappointed in the Vermont Beauty, quite a lot of the young growth was killed back.

Five years ago I set out three of each of the following: Goodale, Seckel and Doyenne Boussock, they have all died.

Dana's Hovey made a good healthy growth, but unfortunately the tar paper was not well secured round it and it got barked by the mice.

I planted four varieties of the Russian, so far they have grown as strong and healthy as a Lombardy Poplar but with no fruit as yet. Next spring, if there is no bloom, I shall top graft them with other varieties.



The great enemy to pear trees is the pear blight. In my opinion the only cure is to feed the tree well and it will resist the blight. I have only lost one tree by the blight and the only way I can account for it, is, a few years ago it was the belief that the only safe way to grow pears in our climate was to plant in the sod. If they were cultivated and manured it would force too rapid a growth and cause them to get winter killed and take the blight. I had two growing, about 40 feet apart, one in the sod, the other in cultivated ground, for a number of years both were loaded with beautiful pears, and I thought here is a good chance to watch the two methods of treatment. I gave the tree in the sod no manure for a couple of years, and gave the other the usual treatment. I noticed on the top of the tree in the sod a small branch about 2 feet long with the leaves all withered and the bark black. I think it was the first year Prof. Craig visited me, after taking his position at the Experimental Farm, at Ottawa, I showed him the tree and he pronounced it pear blight. I cut off the branch about 6 inches below the blight, and dug up the sod round the tree and applied a lot of fruit tree fertilixer, then in the autumn put on a quantity of manure. It was a case of barring the door after the horse was stolen, for the disease was already in the tree. Next summer I was obliged to cut off a large branch, almost half the tree, and eventually had to root out the whole tree. I thus learned that with pears, as well as with all other crops, we must feed them well if we wish them to feed us.

The President—We have listened to that very interesting and valuable paper, and are prepared to discuss it.

Mr. Barnard—I cannot speak of pears in that district of Quebec where the wind is so powerful, but I can speak of pear trees that I received from the Experimental Farm—half a dozen. The only trouble with them is they are growing too fast. I tried to prevent them making too much wood.

Mr. Chapais—I have some pear trees in my orchard, and I have to pinch them all the time in summer. In that way I get some very good wood. I don't think that pear culture in our district will be profitable.

Mr. Westover—Some two or three years ago I had quite a pear fever. The only pears I have succeeded with are Flemish Beauty and Clapp's Favorite. I have a Flemish Beauty thirty years old, and this spring, while spraying my apple trees, I noticed that its blossoms had been touched by the frost a little. I thought I would not trouble to spray it; but I did, and I got the largest crop of fruit that I ever had from it. The blossoms were touched to such an extent that they were brown, but I think the embryo pear had formed at the time, and was not affected. About rapid growth, I always thought that it was a decided failure in a pear to make too much growth. The Flemish Beauty I have spoken of was very near where an old building stood, and the soil was in a pretty good state of fertility.

Mr. J. M. Fisk—I would like to ask Mr. Brodie if he has had the same difficulty in connection with the pear blight in Montreal as we had at Abbotsford on the Russian varieties.

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Mr. Brodie—My Russian varieties are quite free from blight.

Mr. Fisk—My experience is that Russian pears have almost entirely succumbed to blight during the last few years, whilst the Flemish Beauty in most localities is doing well. As to spraying, it seems to me that pears show better results from it than apples generally do. From the trees I have sprayed I have got better fruit than from the apples.

Mr. William Craig—Five years ago we had a lot of Russian varieties of pears, and some Clapp's Favorite and Flemish Beauty. The blight seemed to attack the Russian varieties first, and we have had to cut them all out. I think the Flemish Beauty would have been all right if it had not been planted in with the others. At present we have no pear trees, except a few small ones, planted recently.

Mr. Johnson—In regard to pears, I repeat that we have never succeeded in securing one peck as yet, though we have grown them for about ten years. We have Clapp's Favorite and Flemish Beauty. We were in hopes last summer of having a fine crop, and I think that we would, had it not been for the frost.

The President—Did you spray them as you did the Johnson apple?

Mr. Johnson—I did.

Mr. William Craig—In my remarks I did not mean to say that pear culture would not pay, if we could get the proper varieties.

The President—About twenty years ago I planted some fifty pear trees, and I never got a pear off any of them. Only three or four of the trees are now alive. At the same time, I planted two Flemish Beauties in a garden protected on two sides by high buildings and a fence. They have borne regularly for the last six or eight years. The varieties of Russian pears named by Mr. Brodie I have had for eight years, and they have never borne a pear. They make much growth and are healthy, but they have never borne fruit. I have a pear tree at Montreal which was in the yard when I bought the house, and it yields from a half-bushel to a bushel of very fine fruit every year. It is a yellow pear, of medium size, and keeps through October. I don't know the variety. I don't take any care of it whatever, and I never give it any manure, but it grows well. It has any amount of shelter, and that is, in my opinion, a great cause of success in pear growing. There is no doubt that in the gardens in Montreal they can grow very fine pears. A lady of my acquaintance in the city grows six or seven varieties of pears, and the Flemish Beauty is a success every year. She has Sheldon and Bon Chrétien—the trees are old, probably thirty years of age—but she always has the finest Flemish Beauties I ever saw. I think it is pretty well understood that in Montreal, where the gardens are protected, they can grow pears very successfully. In the country we cannot undertake to grow more than the Flemish Beauty.

Mr. Chapais—In the city they have an artificial climate.

Mr. Johnson—Has Mr. Brodie any special treatment for growing his pears?

Mr. Brodie—There is no special treatment that I know of. The trees I have got bearing are in a Fameuse orchard, and have the natural protection of the trees around. Every fall I put some rotten manure round the trees—spent

manure from underneath the hotbeds. Last spring I was surprised to see them coming into leaf late, and on looking I found the frost was not out of the ground where the manure was over. This experimental orchard I set above the railway track; Mr. Craig saw it last summer.

Professor Craig—With regard to pear culture, we have not at Ottawa had as good success as Mr. Brodie. Six years ago we set all the named varieties of pears, but two, three or four years, they, with one accord, departed. They all went the same way. I have renewed these varieties from time to time. The hardiest I know of are Flemish Beauty, Goodale and Idaho. One of the greatest difficulties we have is first finding a perfectly suitable soil for the pear, which does not adapt itself to as wide a variety as the apple. Mr. Brodie's orchard has a fine, rich, deep loam, and the trees have made a growth that is firm and well rooted. This leads me to say that blight grows rapidly, and is violently injurious in trees which have a large proportion of sap, or which make a very luxuriant growth. It is a bacterial disease, and the germs multiply in a juicy growth. The Russian trees present these conditions very favorably, and at Abbotsford they have practically been killed out, with the exception of one tree, called the Lemon, a strong growing variety, but which has not given us any fruit yet. Some years ago I investigated pear blight, and I tried to get from growers their opinions as to keeping trees healthy and preventing the disease. I asked whether it was more prevalent on cultivated or uncultivated soil, and about sixty per cent. of the replies showed that pear trees which are highly cultivated were more affected by the disease than those which were well grown, but which gave you healthy wood. In all these matters you can run to extremes. I think we can grow pear trees by selecting good soil and favorable situations, and growing them in sod; not in a hard, tough sod, but by using clover. One of the most successful orchards I have seen was at Woodstock, where the owner has been growing clover in it for five years. He does not take it away, but allows it to lie on the ground, and supplements it by using potash. He has had magnificent crops of pears. I think in certain portions of Quebec we can grow the Flemish Beauty with success. I don't see why we should not get \$7 or \$8 a barrel, same as in the west.

Mr. Brodie—I don't believe in late cultivation of pears to force the growth. I cultivate them until about the 15th June. I would not keep a healthy growth going until July or August.

The President—How much growth do they make?

Mr. Brodie—I suppose young shoots from two to three feet; more than that on the Russians. I find that when they come into bearing is the time when they require heavy manuring. I think they will take more nourishment from the ground than any other fruit I know of.

Mr. Fisher—What kind of soil is most suitable?

Mr. Brodie—Our soil is a kind of clay-loam, with a sandy subsoil.

Mr. Barnard—Well drained?

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Mr. Brodie—Oh, yes, well drained. If you work up the soil in the spring of the year it will be lumpy and clotty, showing that there is a considerable quantity of clay.

Mr. Barnard—An important change in the mode of manuring trees would be in using superphosphate in a dissolved form, and less ammonia and less nitrogen. Nitrogen will force the sap in the trees, which won't mature well. The reverse would be obtained with superphosphate in a soluble form. I would like to see tests made in which were used both potash and phosphoric acid; they can be got at a very low rate. As to clover, you cannot grow it unless the soil is fully supplied with phosphoric acid. You would be surprised how little nitrogen would be needed, if you used potash and superphosphate. I have a chart which shows what we can have in clover, and what in leguminous plants.

Mr. Charles Fisk—We had a Bessemianka the fruit of which would rot on the tree, and if picked two or three weeks before it was ripe, it would rot on our hands. We tried top-grafting on the Russians with Flemish Beauties, and it gave us some very fine fruit in about two years.

The President—Have you fruited any of the Russian pears?

Mr. Chas. Fisk—Not with us. In an apple orchard we have trees that have been planted for twenty-five years, but which did not bear until the last two or three years. We laid it to the fact of no other pear trees having been planted in the orchard, and since these have come into flower we have had good crops. We put it down to self-fertilizing.

Professor Craig—The Flemish Beauty is not a complete self-fertilizer, but sufficiently so to give us good crops. The Beurre d'Anjou is a partial self-fertilizer, but it is better to have a Flemish Beauty planted alongside it. The Goodale is also a partial self-fertilizer. If you have Bartletts alone, you are not likely to get good fruit.

Mr. Johnson—As I understand it, clay is best adapted for pears. Would it be well to take away a certain portion of soil and replace it with clay, and set your trees in it? Those who have not clay-loam must do something.

Mr. Brodie—Pear trees can stand pretty dry soil. Some of our soils where we have had good bearing trees have been dry. In digging a foundation for a cellar a few years ago we had to remove four Fameuse trees, and the soil was dry, and for about six feet you had to use the pick. The pears seemed to thrive freely in that soil. Between the row of trees the soil was moist. As far as drainage is concerned, I find it is best to put the drains—stone ore the best—between the rows of trees, and not under the roots.

Professor Fletcher—Did the willows get into your drains?

Mr. Brodie—Oh, no.

Mr. J. M. Fisk—I think it would be a mistaken idea to go abroad that clay is absolutely necessary to pear culture. At Abbotsford we have no clay at all; it is sand, or gravel. I think that the pear requires the natural drainage more

than the apple. It is a tree that sends down its roots I don't know how deep. You want a deep, porous soil. Any soil that has hard pan near the surface is not fit for pears.

Mr. Johnson—I was instructed to try it that way. As regards drainage, our orchard does not require it.

Professor Craig—While clay-loam is the ideal soil for pears, I don't think it is always necessary to stop planting a fruit because we have not got the ideal conditions. I would not advise Mr. Johnson to dig a hole and replace the soil with clay, because his own experience would soon show him how the roots would get away from it. The old roots, which are not the feeding ones at all, would be in the clay.

Mr. Chapais (to Mr. J. M. Fisk)—In December, '94, you had a Russian pear which you showed at Quebec. Was it good to eat later on?

Mr. Fisk—If it was a Russian, it would be Bessemianka.

The President—Have you had any success in fruiting Russians?

Mr. Fisk—Yes; but it is a perishable pear.

Mr. Ball—If it is possible to grow pears in this province, it is something which should be encouraged, because among the larger fruits there is none that is more desirable of cultivation. I set a number of trees about six years ago, and the ground has been thoroughly cultivated. They have grown rapidly, and have made any amount of wood. They seem to be perfectly healthy, but, for some reason or other, I have never been able to gather any pears. Two of the trees have blossomed for two years; but I lay the want of a crop to the late frosts killing the blossoms. One tree is a Ritson and the other a Flemish Beauty.

Professor Craig—Do you think that the Ritson is hardier than the Flemish Beauty?

Mr. Ball—It is a very fine growing tree.

The President—What is the season?

Mr. Ball—It is claimed to be a late fall pear.

The President—Later than the Flemish Beauty?

Mr. Ball—A little later.

The President—Is it of good quality and size?

Mr. Ball—I have not seen a pear yet. It must be a tree that bears young. My soil has no clay in it. The trees have been highly cultivated, and I have enriched the ground. I have got the pear fever, same as Mr. Westover remarked that he had a few years ago, and I have been thinking of setting out fifty or a hundred trees of two or three varieties. From my observation and experience, I should set, principally, the Flemish Beauty. We have a number of Flemish Beauty trees in Brome County that have been set for fifteen or twenty years,

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and they bear good crops. It is the only variety that we grow to any extent. With regard to Mr. Johnson digging a hole and filling it up with clay, it would be like a farmer making a hole and putting in a handful of phosphate; the roots would get away from it.

Mr. Newman—I don't think pear culture will assume any great proportions until we have some seedlings of our own to work on. We cannot work on imported fruits on a large scale.

Mr. Westover—Speaking about pear trees and the time they come into bearing, about the time I was planting my first orchard, I had an old English gardener, who said: "If you want fruit early, you must put on plenty of ashes; but if you want the trees to grow fast, put on lime." I put on lime for a year or two, but since then I have used ashes. In growing apples I find that the Russian varieties all bear young. We should encourage that in growing pears. I think, as a general thing, the Flemish Beauty is naturally a long time in coming into bearing.

Mr. Brodie—The Goodale was my best; it bore two pears the second year after planting.

Professor Craig—In ashes you have lime; but when lime is applied by itself, it has no direct effect on the soil; it is not a direct fertilizer, but it is a tonic, or solvent, serving the purpose of rendering available other constituents which are not directly available to the plant. It may unlock them. I think its value principally lies in its use as a fertilizer for certain soils.

Mr. Barnard—Some soils have no lime, and no fertilizer will replace the lime. Most soils have not enough lime for practical purposes. We want lime more than any other country. In France and England they have too much; here we have not sufficient. We have any quantity of stone, but it is not in a form available for the use of the soil.

Professor Craig—It is only soluble in the proportion of about one part in four thousand.

Mr. Barnard—I speak of lime in the stone state, not burned or available. There is soil in St. Maurice with limestone six or eight feet deep, and the moment you burn it and put it on the soil you have good crops; but until then it is useless.

The meeting then adjourned until 2.30 p. m.

#### FRUIT EXPERIMENTAL STATIONS.

On reassembling, the President again took the chair, and Mr. J. C. Chapais read a paper on "Fruit Experimental Stations." He said:

The farmer who intends to become a fruit-grower must begin by getting a thorough knowledge of such fruits as are adapted to the climate of the region where he lives. He has many means of acquiring that knowledge. The first is personal experience; *i.e.*, the test made by himself of different varieties. This



way is defective, because, first, it is a long and tedious one, and, then, it is very costly. The man following it is exposed to the risk of dying, perhaps, at the very moment he would benefit by the result of his experiments. Another way is to take advantage of the experience of an experimenter who has previously employed for himself the first mentioned course of acquiring the necessary knowledge. This way is not yet very practical, in that sense that this fruit-grower whose steps you want to follow has, perhaps, limited his experiments to one or two classes only of the fruits you intend to grow, a thing which would necessarily keep you out of the knowledge of many details not elucidated by him. There remains a third way, which is by far more practical—that of looking for the results obtained by a body of fruit-growers, who, being united together in an association, publish in elaborate reports the results of their investigations, of their experiments, and by so doing, communicate to the whole country the means of taking advantage of their success and avoid their mistakes. This is certainly the best of the three means I have mentioned. But, in order that this way may be such as to give satisfaction to the fruit-growers of a rather extensive district, the association which has taken as its mission to develop fruit-growing must put itself in a condition which will enable it to be thoroughly posted about the adaptability of the different varieties of fruit to the various districts of the province which is the field of its investigations. Now, the only way for an association to become able, first, to acquire, and then to disseminate the knowledge which is of interest for the fruit-growers of a province, is to organize a complete system of experimentation, made by able men qualified to make the experimental work which is to be offered later as an example to be followed by those who wish to benefit by it for the establishment of their orchards.

What I have just said above was suggested to me by the study I have made of the method followed by the Ontario Fruit-Growers' Association to spread as good information as possible amongst its members about the varieties of fruit they can grow in the different districts where they live in that large province. After having discussed the subject during a few years, that Association came to the conclusion that the establishment in various districts of Ontario of fruit experimental stations is the surest and most effective way of giving the means to make a profitable fruit culture to the farmers of that province, and of promptly developing that industry, which may become a source of great profit for those who know how to attend to it.

If the Ontario Fruit-Growers' Association thought it was well to organize such a system to promote the interests of the fruit-growing industry, our Pomological Society of Quebec ought to feel much more the necessity of applying the same system in our province, where the climate shows much more variations in the various districts than it does in those of Ontario. I will give here some facts proving what I have just said about these wide variations of our climate: When grass begins to cover with its green blades the soil in the counties of Huntingdon, Napierville and St. John, at the end of April, it just begins to show its first appearance in the counties of Richmond and Arthabaska; and at the same season snow has just disappeared in Beauce and Quebec districts, while it is yet melting away in the counties of Kamouraska and Rimouski. At the beginning of June, lilacs show their flowers in Montreal, while their flowers are only in buds at Three Rivers, and they are just opening their leaves at Kamouraska.

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Apple trees blossom at the end of May west of Montreal, about the 10th of June at Arthabaska, and about the 20th of the same month at Kamouraska. Garden strawberries are ripe the 20th of June west of Montreal, at the beginning of July at Arthabaska, and about the 15th of July at Kamouraska. To sum up, we may well say that from the forty-fifth to the forty-eight degrees of latitude we have a distinct climate for every half degree, following the course of the St. Lawrence River. If, further, we take into consideration the variations of our climate in altitude, we find that, in the mountains, it shows as much difference, while we go higher, as it does in latitude.

From these facts, it is quite evident that a farmer who, wishing to grow fruits below Quebec or at Lake St. John, would try to imitate what is done, in that sense, in the island of Montreal, would lose both his time and his trouble. He must then follow one of the three courses mentioned above. Shall I advise him to follow the first or the second of the courses? Of course, no; for the reasons given before showing that they are not practical. He would then have to follow the third one, and to affiliate himself to the Pomological Society of our Province to benefit by the work and the experience of its members. But if our Society wants him to get all the needed information, we must take the measures taken by our sister associations of Ontario; we must organize fruit experimental stations in the districts of our province where the climate shows the greatest variations, when compared with the climate of its other regions.

If we consider what has been done in Ontario, we see that such a system can be established with little expense. The trees needed for the fruit experimental stations are obtained for the greatest part from the Ottawa Central Experimental Farm, which has the mission of propagating the varieties of fruit most useful for the various provinces of the Dominion. The fruit experimental stations are established on the farms of fruit-growers having good orchards and experimenting since many years; and in Ontario they have found some of those fruit-growers who, for the humble remuneration of one hundred dollars a year, take charge of the administration and arrangements of the station, under the condition that, if the station loses, later, its official character, the trees become the property of the ex-director of the station. The cost of maintaining the fruit experimental stations of Ontario, four in number, amounted, all expenses included, to one thousand dollars last year.

In our province, the thorough knowledge I have of its various districts induces me to believe that four stations would be required—one for the district below Quebec; one for the Lake St. John and Chicoutimi district; one for the counties of the North, in the region of Terrebonne County, and one for Beauce and Eastern Townships, somewhere at Sherbrooke. As to the western districts, I think they have all they require at Abbotsford, in the Island of Montreal, and at Oka.

I sincerely believe that our association can make a much more effective and prompt work for the development of the fruit-growing industry in our province, by means of such stations, than by any other way. We will give, by that system, information—on the spot, so to speak—to those who wish to plant orchards, will prevent them from throwing away their money, as many have done during



these last few years, having bought varieties of fruits unfitted for the region where they live, and which were sold to them by unscrupulous or ignorant agents. We would, on the contrary, enable them to plant, with complete security, the varieties adapted to their climate.

In order to give a regular shape to the idea developed in the remarks just made, I propose that, after discussion, should it be considered as being worthy of the attention of the Society, a committee be appointed to study that question of fruit experimental stations, to make a report of its deliberations to the Board of Directors of the Society as soon as possible during the present winter, in order to give time to the Board of Directors, should the report be in favor of the establishment of such stations, to put itself in communication with the Honorable the Ministers of Agriculture at Ottawa and Quebec to obtain the appropriations in money and trees needed for the organization of these stations in the Province of Quebec as early as next spring, if possible.

The President—I think we are very much indebted to Mr. Chapais for his very valuable paper. The subject he has brought up is a very important one.

Mr. Barnard—I think it is so important that I would propose that, as soon as the committee mentioned by Mr. Chapais reports, both the paper to which we have just listened and the committee's report be sent to the Commissioner of Agriculture, so that they can be printed in the official publication.

Professor Craig—I had the privilege of working on the committee in connection with the Ontario Fruit-Growers' Association which first drafted the scheme for experimental stations. It was rather a difficult thing to do. They had a small amount of money, and just how to work in the requisite number of stations with the limited amount of grant they expected to obtain was a problem. It was done in this way: Any specialist who had made a study of any particular class of fruit was roped in. The benefit of his work and previous experience was taken advantage of, and, if he desired, he was made the experimentalist of plums, if a plum specialist, or of grapes, strawberries or apples, if a specialist in these fruits, and to his collection we added a sufficient number of varieties to make it complete. He was given \$100 the first year, to pay him for his time and trouble, and he was asked to give a report each year. In this way five stations were established. The first report would bring up to date the experience gained by him up to that time. In the second year two more stations were established, and three more are to be added this year, so that next year there will be ten stations in Ontario, covering pretty well all these classes of fruit. As experimentalists, we recognise the value of this kind of work. I don't see why, with a small expenditure of money, the same scheme could not be carried on here. It would bring your society into close touch with the Department of Agriculture for the province, and we at the Experimental Farm would be still closer to you, if possible, and would co-operate with you from a fruit-grower's standpoint. If such a thing is started, our director at the Experimental Farm, and, I think, I may add the Minister of Agriculture, would be only too glad to co-operate with you in every way possible.

Mr. Brodie—I propose that Mr. Chapais, Professor Craig, and the President

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and the Secretary of the Pomological Society, with power to add to their number, be appointed a committee for the purpose named by Mr. Chapais in his paper.

Mr. Louis Hamel seconded the motion, which was unanimously concurred in.

### CRANBERRY CULTURE.

Mr. J. M. Fisk read a paper on "Cranberry Culture." He said :

Why is it that the Cranberry, which is indigenous to this country, is not more generally cultivated ?

Not for the want of productiveness, for while 100 bushels per acre is an ordinary yield, as many as 400 and 500 bushels have been grown under favorable circumstances ; and as for price, while it, like all products is governed by the supply and demand fluctuation, yet compares favorably with other small fruits, the wholesale price ranging from \$5.00 to \$10.00 per barrel according to size, color, and quality of fruit, which usually retails at 40 cents per gallon or 10 cents per quart.

Nor do we lack for the proper qualifications of soil to grow this fruit, as it is often found growing wild on our marshy and boggy lands.

It is not a plant that requires high cultivation and so become a tax on our manure supplies and other fertilizers as most of our small fruits do, but on the contrary is quite content to thrive upon waste lands so to speak, composed of muck of a spongy and peaty nature well incorporated with sand, quite destitute of any vegetable matter ; in short a white clean sand such as one would select for the mason to make good mortar with.

There are many farms in this province which have just such waste places that would suit the cranberry ; ground which is actually bringing the owner no remuneration whatever, in fact, is an expense to him, inasmuch as he is unable to drain it, and is paying taxes upon it at the same ratio as the most productive field he has ; while if he were to experiment a bit, and try to utilize it by planting the cranberry, it might become more remunerative than his best tilled field over which he has no anxiety.

Even if the waste piece of ground does not exceed more than a few square yards in extent, it will pay to turn it into a permanent cranberry patch for family use, and should it comprise more, so much the more need from a commercial point of view for making the attempt.

It is not necessary to import vines from Cape Cod, or Massachusetts, in order to get good fruit, for upon our own native marshes, among the wild varieties which can be improved by cultivation, are to be found berries resembling the favorite varieties grown in those celebrated cranberry districts, and with far less risk of introducing insect pests of which our native vines are comparatively free.

The sample of Cranberries which I exhibit here to-day was taken from a patch planted some 18 years ago, from vines procured from the marsh at St. Brigide, and for the last 15 years has rarely failed in furnishing an annual supply for family use.

The best way to select vines to plant, is to visit the nearest marsh during the month of September before the fruit is picked, as it enables one to make a better selection, for the fruit often differs in form, size, color and quality.

Be careful to take vines whose leaves are of a greenish-brown color, and avoid those of a bright shining green of a more luxuriant growth, as they will prove to be less productive.

It is unnecessary to dig the roots with the vines, as they grow readily from cuttings, and may be kept on the bottom of a damp cool cellar, or trenched in damp soil until spring, which is the best season to plant.

The soil best adapted to the Cranberry is muck of a spongy, peaty nature, which when squeezed in the hand will readily fall apart, and does not partake of a sticky, or clayey nature.

To prepare the ground it is first necessary to clear the surface from all scrub, turf, and weeds, leaving it as smooth as possible; dig a ditch from 2 to 3 feet deep and about the same width all around the plot selected, and if more than an acre in extent transverse ditches should be made to hold the water so drained from the bog, which makes a framework of damp coolness about the growing vines; then proceed to cover the surface with a layer of sand about 4 inches in depth, which should be free from vegetable matter and weed seeds; plant the vines in rows about two feet apart, using a line and making a drill with a hoe, or should the ground be sufficiently firm a horse and light plough might be used for this purpose. Bend the cuttings, which should be from 6 to 8 inches in length, and place in the drill or furrow so that the centre will be well covered with sand, leaving the two ends an inch or two above ground at equal distances in the row.

The ground should be cultivated and kept free from weeds for the first three years, or until the ground is well occupied with the vines, when the first real crop may be expected.

It is not absolutely necessary to flood the vines in order to obtain fruit, and a bog may be either dry or wet, but if circumstances favor the method of flooding, and some growers claim this to be an important point, it is wise to provide for this; for by so doing the grower will be in a position to guard against late frosts in the spring, which sometimes injure the fruit buds; as well as early frosts in the fall which often come before the crop is harvested, and also for drowning any insects which may attack the vine or fruit.

Fruit growers are looking for fruits that will do for the export trade, as well as for home consumption.

Here is one that should be more largely encouraged, for it will answer for both purposes, being a fruit which ships well and keeps fresh during the winter

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months, and when well grown and harvested will bring remunerative prices both at home and abroad ; and is becoming more popular as a necessary accompaniment at the festive board at Thanksgiving and Christmas time ; and besides making toothsome sauce, pies and puddings, it is an antidote to the oily nature of the turkey and other fat meats served at these seasons ; and if it, and other wholesome acid fruits were more generally used upon our tables as an article of diet, there would be less necessity to resort to pepsin and other medicines to relieve dyspepsia.

Mr. William Craig—I had, fifteen years ago, experience under the late Mr. Charles Gibb. We went carefully about the work, and we put the plants on somewhat high ground, too high, I suppose, as, in a year or two, there was nothing to be found ; they died out. The remnant we threw into a low place, where it was wet and moist, and they are giving us a little crop every year. That remnant was what gave me the idea that I should like to try cranberry culture, and last year I prepared a piece of land, and dibbled in some small plants that I secured through my brother, and they did very nicely.

The President—Does dibbling-in do as well as the method spoken of by Mr. Fisk ?

Mr. J. M. Fisk—Either system will do.

Mr. William Craig—I have a natural sand dyke, and, by stopping the ditch, I can flood the plants beautifully. If the land is got ready in the fall, it is a great expense getting the sand on. I think if the land is got perfectly level and ready, the sand can be drawn in the winter and scattered over, and in the spring it is all right.

The President—Is it necessary to have the sand ?

Mr. Fisk—It keeps down the weeds.

Mr. Brodie—Would soil that grows good celery do for cranberries ?

Mr. Fisk—I think it would be too dry.

Mr. Brodie—Towards Lachine there are acres of land where you go down thirty feet through bog. I tried the culture of cranberries once, but did not succeed. The plants came from a long distance, and were all dried up.

Mr. Fisk—Coming from Farnham to St. Johns, on the C.P.R., we passed a piece of bog land which, if it were down at Cape Cod, would have been gobbled up by cranberry men ; but here it is lying idle.

Professor Craig—I think the subject is a very important one. It is coming up all over the country, and, in meeting the different fruit-growers' associations, I find some men, like Mr. Fisk, introducing the industry, and impressing other people with its importance. One of the requisites is a vegetable soil, not an alluvial soil. We have any amount of that soil here. In Nova Scotia, for the past three winters, Mr. Shaw, a very interesting speaker, and a great enthusiast, has been telling of the great profits that he has been getting from a cranberry marsh. Last year he showed the account of the sales from two acres. The



berries were sold in Montreal, and realized about \$700; they fetched a little less than \$7 a barrel. This year the returns were not quite so large, but were something over \$100 an acre, clear. I was in Prince Edward Island last week, and they are going into cranberry growing there. A man sold this year, in Liverpool, fifty barrels off  $2\frac{1}{4}$  acres for \$6.35 per barrel. His bog was natural, and had not been flooded at all. I think, however, that it is necessary for us to flood our bogs, because in some seasons late frosts will catch us, and we shall lose a whole season. The flooding is done in the fall, and is left on till the danger of late spring frosts is passed. Mr. Shaw is a most enthusiastic chap. He is a bit of a Yankee, and has a somewhat odd way of expressing things. A little time ago he got worked up, and, in speaking, said; "Why, gentlemen, I can take land in this county—land that ain't good for anything but to hold the county together—plant cranberries on it, and get good "returns." Apart from monetary considerations, I think Mr. Fisk advances a very good reason for cranberry culture.

Mr. Fisk—Professor Craig has spoken about the returns per acre; I have read of as much as \$1,000 per acre being made out of cranberries, but I have never seen the man who made it.

The President—You didn't say how many hundred dollars you made.

Mr. Fisk—I have only a small patch; but I have frequently picked a quart measure full of fruit from a yard square on the patch, where the cattle ran, not fenced in or protected. That will give you over \$100 an acre, and without any attention whatever.

Mr. Roy—Cranberries used to be a source of revenue in Ste. Brigide, but since they have drained the land, the cranberries have gone. It would be an easy thing, however, to make it a cranberry-growing district yet. You talk of Cape Cod; there they have cranberry beds that cost \$400 an acre to prepare, whereas, at St. Brigide all you have to do is to hold the water. It would be well if the Government would undertake an experiment, because there are quite a few acres that would give as good results as any other cranberry land.

Prof. Fletcher—The varieties principally cultivated in Cape Cod are the bugle and the bell. There are others, but these are the two standard sorts; they are recognized varieties. In Canada the kinds that have been collected up to the present time are three, and they are found principally in Nova Scotia. The variety Mr. Fisk has here (taking up a sample of cranberries shown by Mr. Fisk) is one of them. Then there is a darker colored variety—more of the bugle shape—and a smaller one. The dark red one takes best in the market.

The President—Perhaps Mr. Fletcher could give us some information about the high-bush cranberry.

Prof. Fletcher—The high-bush is not a cranberry; it is of the same family as the snowball, or guelder rose. It is called a cranberry because it resembles it in flavor. The true cranberry is a low, creeping vine; it is found in bogs. One variety of cranberry, the *macrocooccus*, is not worth cultivating; it bears a small berry. The Cape Cod varieties are three or four, simply differing in the shape

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of the fruit. Most of the kinds contained in Mr. Fisk's sample are grown as separate varieties in Massachusetts.

Mr. Barnard—What do you think of cultivating them on dry land?

Prof. Fletcher—They would do better on wet, which is their natural condition; but they will succeed on dry land fairly well.

Mr. Barnard—My experience of dry cultivation was that it was a failure.

Mr. Fisk—I have grown cranberries on high land for eighteen years, and have never flooded.

Professor Fletcher—What do you mean by high land?

Mr. Fisk—Land moist enough for the vine, but not flooded.

Mr. Barnard—Wet land?

Mr. Fisk—Yes. And, now, as to varieties. They are growing down south a number of varieties, but, at first, they went to the swamps, got their plants, cultivated them and named them. The long-shaped ones in my sample I got from St. Brigide, and a year or two later I got a small, gray berry from a swamp near Granby.

Professor Fletcher (taking up Mr. Fisk's sample)—There are two varieties here, and you also get one like a balloon.

Mr. Fisk—I selected the best vines I could find. I don't think it is necessary to import vines at all.

Professor Fletcher (handling Mr. Fisk's sample)—All of these are similar forms. There is only one species in nature which occurs north of Labrador down to the United States. As to flooding, I don't think that it is necessary to the growth of the vine at all. The surface of a swamp floats with nature, and is never submerged. Flooding has been adopted very largely as a means of keeping down injurious insects, and also of keeping the buds warm. If submerging takes place directly the caterpillars are hatched, the plants are then in a state in which they are not injured; that is, if the submerging is within reason. I should say that Mr. Fisk's land is natural land for the plant.

Mr. Fisk—There is the continual damp, but not flood.

Mr. Fisher—The roots of the plants are constantly in saturated muck.

Mr. Fisk—Yes.

Mr. Fisher—Is it mixed with sand?

Mr. Fisk—I prepared one piece by putting sand on the surface; the other was where I had taken away muck for composting, and the sand was simply mixed with it.

Professor Fletcher—Sand is very seldom found where the plant occurs naturally; but in such cases, the same crops are not produced as under cultivation.

Professor Craig—It runs very largely to foliage and leaves. The ideal cranberry marsh is a marsh with five or six inches of muck, and sand on the top of it. The sand keeps down weeds. If you have too much muck, it injures the growth of foliage, and, instead of producing blossoms, the plants produce tiny tufts of leaves. It also forces the growth, instead of making fruit. It is necessary, in order to get big crops, to starve the plant to some extent. Flooding is done to kill insects, and to lessen the liability to injury from late frosts.

Mr. Barnard—I would suggest that the Committee make experiments in the cultivation of cranberries, wherever possible.

The President—You had better not put too much on that Committee. It will be a subject for the experimental stations to take up.

Mr. Chapais—The Committee has only to urge the system of experimental stations.

Mr. Roy—The Committee can add to its number; it can add Mr. Fisk and others.

The President—I think cranberry culture has been very much neglected in this province. We have quantities of land only "holding the counties together" that might be used for the cranberry culture. In the county of Prescott, Ont., there are miles of country well adapted for cranberry culture, just as there is at St. Brigide. Every farmer might have a nice little patch of cranberries, and make it profitable. I think we should turn our attention to their cultivation.

#### SOME THOUGHTS ON APPLE-GROWING.

Professor Craig gave an address on "Some Thoughts on Apple-Growing," using charts in explanation of his remarks. He said: In continuation of the interesting discussion we started last night, and which has been touched on once or twice this morning, I want to draw your attention, for a short time, to some of the elements contained in the soil which touch the interests of the fruit-growers most nearly. I think the fruit-grower, in common with the agriculturist, should consider the soil his bank, which he draws upon in different ways when he grows different crops, and I am going to consider, very briefly, some of the results that the Chemical Department of the Experimental Farm has given us, and which are valuable to us. The chemist will tell you that the three principal constituents to be considered in the soil, and which constitute the bank account, are nitrogen, phosphoric acid and potash. We have to-day touched, to a limited extent, upon the functions of these three elements in plant growth. We have been told that nitrogen is a foliage producer. On this chart I have drawn the results obtained by Mr. Shutt from an analysis of apple leaves, showing what they took from the soil in their formation period. You will see from it that there is about twice as much nitrogen extracted as phosphoric acid and potash. That practically illustrated the comparative amounts of these different foods we should give to our growing apple trees. But we see that when a tree comes to

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fruit, it draws from the soil these different elements in different proportions; for instance, it will draw a comparatively larger amount of nitrogen than during the formation period, a very much higher amount of phosphoric acid, and a still greater quantity of potash, in proportion. This shows us at once the desirability of giving to the soil that particular food which the apple trees so largely draw upon at a particular time.

Just at this point, if I may be allowed to digress for a minute, I will tell you where the potash is most largely stored. It is not in making the pulp or the big apple. Potash undoubtedly influences the color of the fruit, and, to some extent, the quality. I think that soils rich in potash will give us better fruit than poor ones. The potash is found most largely stored in the seeds of the apple; it is used up by them in perfecting themselves. The apple reproduces itself by making seeds, and in its efforts to perfect them, it draws largely on the potash of the soil; so that it costs the apple tree just as much, or nearly so, to produce a small apple as a big one.

There has too long been an idea that fruit-growers can afford to grow two crops on the same soil. They can do it; but nine times out of ten, they don't give to the soil a double quantity of manure. In the interests of apple culture in the future, I take rather a determined stand upon this question. I have here a chart made at Cornell Experimental Station. Professor Roberts went into the question very closely, and, after analysing whole trees—root, branches and stem—and calculating the amount of fruit they bore, he gives us figures showing that fruit from an acre of apple trees takes from the soil, in twenty years, 498 lbs. of nitrogen, 38 lbs. of phosphoric acid, and 728 lbs. of potash. The leaves, in the same period, took a relatively large amount as well. The total value of all these constituents would be \$207.45.

Mr. Newman—Don't the leaves go back?

Professor Craig—We are not allowing anything for the leaves going back; they are caught by anything, any piece of shelter that is about, and they drift into corners all round.

What would you think of growing an acre of wheat for twenty years on the same soil, without fertilizing it? And yet, when we look at what an acre of straw or grain takes out of the soil, it is relatively less than that taken out by an acre of apple trees, being only 128.23, as compared with the other.

I use this chart in order to emphasize the necessity of fertilizing our orchards more freely than we do.

As to the sources of nitrogen, phosphoric acid and potash, I may say that nitrogen is a very common element. It surrounds us in large quantity, as we learned when we were schoolboys, for it makes up about four-fifths of the atmosphere. In that shape, however, it is rather intangible. But we have a class of plants that are able to grasp it from the atmosphere, such as clovers, beans, peas, and all the *leguminosæ*. These plants are not able of themselves to seize the nitrogen of the atmosphere, but they are enabled to do so by a little army of workers which inhabit small nodules found on the roots of the clovers. They belong to a class of plants called bacteria, which exercise an important

part in the economy of the world. They are able to seize upon the nitrogen of the atmosphere, and to liberate it and distribute it through the tissues of the clover plant. This gives us a valuable hint as to how we can take to ourselves the nitrogen of the atmosphere in a cheap manner—that by growing soiling crops, and ploughing them under, we are able to return to the orchard soil a sufficient quantity of this most expensive element (if you buy it), nitrogen.

In an ordinary sample of barnyard manure you get these elements in about the requisite proportion. The manure can be used as a top-dressing before the trees bear fruit. But after they come into bearing you need more potash, which is in the cheapest and most available form in wood ashes, the value of which lies largely in the fact of their being made from hard wood. If the ashes are left in the back yard, the rain falls on them and carries off the lye, and the remainder consists of magnesia, and so forth. If we are unable to secure wood ashes, we have other forms of chemical fertilizers containing potash; probably muriate is the best.

With regard to phosphoric acid, plants in fruit need a considerable quantity of it. In bone meal and phosphates you always get a good percentage of this. Mr. Barnard referred this morning to superphosphates. I would like to say a word on the subject. Many farmers have an idea that, when they buy superphosphates, they are buying a complete fertilizer. This is a mistake, because superphosphates contain only phosphoric acid. It means that bones have been treated with acid, which brings them into soluble form; it means that if you apply the dissolved bone, you may expect to get your returns the same year. If you apply the simple raw bone, or the phosphate pure and simple, the results will take longer to accomplish. It is important for us to remember that if we buy superphosphates, we only buy phosphoric acid.

I have made out one or two formulas for use in orchards. As an ordinary fertilizer for a bearing orchard, I would suggest the employment every year, for each acre of orchard, of

Barnyard manure.....	10 to 15 tons.
Muriate of potash.....	300 lbs. to 500 lbs.
Superphosphates.....	125 lbs. to 250 lbs

When applying this, if you find that your trees are making lots of wood and good healthy leaves, but not enough of fruit, it is an indication that you have sufficient nitrogen, perhaps too much, and it would be a wise thing to lessen the amount of barnyard manure and to increase the muriate of potash. If you have wood ashes, I would suggest the use of twenty tons of barnyard manure the first year, and from forty to sixty bushels of wood ashes the next year, and so alternate the treatment, at the same time watching the trees and see the effect of the two. If the foliage is healthy and the trees are making enough wood, but don't bear readily, I would suggest more wood ashes.

Mr. Barnard—Wouldn't you use any phosphoric acid?

Professor Craig—I think you will get enough between the barnyard manure and the wood ashes. An analysis of wood ashes at Ottawa shows we usually

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have 1 7-10 per cent. phosphoric acid present. One of the most easily obtainable sources of nitrogen is nitrate of soda, of which there are vast deposits in Chili. In it the nitrogen is immediately available. I would suggest the use per acre of

Nitrate of soda.....	125 lbs.
Superphosphate .....	200 lbs.
Muriate of potash,.....	100 lbs.

This is a formula from which you might expect immediate results; and in some cases where your orchards were in bad shape, and you applied such a mixture, I should expect you to see the results in a short time.

Mr. Chapais—When would you apply these?

Professor Craig—Always in the spring, with the exception of the barnyard manure. The wood ashes I should apply in the spring, because the rains would wash them away, if applied before. I think the best time for manures is when the ground is in the most receptive condition and the trees are prepared to take it up best.

Mr. Brodie—I know some people who cart out liquid manure in barrels and put it all over the land.

Professor Craig—It contains a large quantity of nitrogen, and also potash.

Mr. Roy—It must be a green manure. Would it be better to use green manure than rotten manure?

Professor Craig—It is whether you think it advisable to do so. Our experiments at the Farm lead us to believe it is best to put the green manure out without fermentation. We have had the best results from green manures; better than from anything else. As to getting the most out of the fertilizers, we can only get the most when we have sufficient moisture in the soil. Water is the carrying agent by which these fertilizing elements are brought up into the tree and into the leaves, or stomach of the plant, and they are worked up with the material the leaves take from the atmosphere. What the tree takes from the soil forms only a small part of the bulk of the tree. A certain amount of water in the soil is necessary to get the greatest use from the fertilizers. This brings us back to the necessity of cultivating. If we grow a crop that saps the soil of moisture, we may lack in moisture, and the other crop may rob the tree by taking away the moisture and fertilizing materials. Cereal crops and grass crops take more moisture from the soil than any others, since they cover the whole surface. Any root crop which is cultivated between the rows will take less moisture from the soil than one like grass, wheat or oats. If you are growing two crops, manure thoroughly, and grow as a second crop one which requires cultivation, like early potatoes, which are taken out of the soil at the time when cultivation should cease and the soil not be disturbed afterwards. After the trees get large, you might seed down to clover, and, after a crop or two, turn over the soil and cultivate for two or three years, and so alternate year by year.

Mr. Barnard—In old orchards?



Professor Craig—Yes. In some orchards it is difficult to do this where the trees are planted closely together. In the early spring you could tear up the sod with a spring-tooth harrow, and sow buckwheat, cutting it before it seeds, and next year, or in the fall, you might sow clover, and get a good crop. I have not followed any distinct line in this matter, but I will be glad to answer any questions I can. I would, however, like to leave this thought with you: that we need to manure, to cultivate and to spray, and it is desirable that we should not tie ourselves down to one of these as the sum total necessary to successful work in Quebec; but by a judicious combination of all three, supplemented by our experience, we shall, no doubt, be able to grow fine samples of apples in this province.

Mr. Roy—I would like to know if you have tried covering the ground with straw, to the depth of four, five or six inches, to keep in the moisture.

Professor Craig—I don't think you could hold any more moisture by covering with straw than by breaking up the surface of the soil by friction and cultivation. At the Farm at Ottawa, our orchards are on a sandy soil, but there is no time when you cannot find moist soil within three or four inches of the surface. We stir the soil up by passing a cultivator down between the apple trees.

Mr. Brodie—Do you like the Acme harrow?

Professor Craig—It is a first-rate harrow for the spring.

Mr. J. M. Fisk—Supposing that your trees are planted on land you cannot cultivate?

Professor Craig—I should be in favor of sheep grazing. All trees are not trained in such a way as to allow of sheep being put into an orchard, especially sheep which have been trained to feed upon young boughs by browsing in the woods. If they have acquired such a habit, they are very likely to carry it into practice in the orchard. In rough orchards, however, if the sheep were given some supplementary food, such as meal, it would largely take away their appetite for the boughs.

Mr. Halcro—Would not hogs be better?

Professor Craig—They sometimes take a preference for certain gardens, and sometimes they almost root a tree up. Sheep manure contains a large amount of potash, and for that reason these animals make a very valuable grazing stock.

Mr. Brodie—I have got about fifteen acres of orchard in the sod, and fifteen in cultivated ground. The trouble with the latter is that there are a good many summer apples, and, with the windfalls, it is dirty work getting them into a clean condition for market sometimes. There is always a certain percentage of windfalls that are marketable, and you have to wash them sometimes. Last year my best apples were off sod land. I had more codling moth and curculio on the cultivated land than on the other. The trees were sprayed with Bordeaux mixture and Paris green. I suppose some of the wormy apples were left on the ground, and were buried in the cultivation of the soil. In the sod, as soon as

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the apple crop is safe, I turn in the cattle for a couple of hours. They leave the grass, and go for any apples that are around. In this way I think they destroy the insects. When barrelling on cultivated land, it is very difficult to head-up the barrels. I have to have planks and boards on which to do it, but the heads are apt to get dirty. As to cultivating, I favor it until the trees are twelve or fifteen years old. I like to take two crops by manuring, as I want to get as much out of my land as I can.

Mr. Barnard—In Normandy, England and Germany they can obtain two crops for centuries without ploughing in. I think the only reason is that these crops are highly manured. The ground is made as rich as it can be, and there is enough for two crops. Mr. Craig's objection is not to manuring, but to drying up the surface, and not having enough moisture. He admits that he can take a root crop by cultivation; but he will find that it will take as much water as any grass crop, or, perhaps, a little more.

Professor Craig—It is not what the plant takes in; it is what it inhales from its leaves.

Mr. Barnard—You will admit that a root crop has as large a leaf surface as a grass crop. You know perfectly well how abundant that crop would be, if highly manured. There is such an abundance of water flowing in Canada from the last of September to the 1st May—over twenty-two inches on the average—that it fills the ground with water, and if there is an abundant growth, it brings the water up gradually, by capillary attraction, as a pump would. It will go down to the depths of the land, and if water is to be found it will be brought up.

Mr. Newman—Which is the best harrow to work over the ground?

Professor Craig—I think the Cutaway, or a strong spring-tooth.

Mr. Newman—How late do you work?

Professor Craig—I usually work up to about the 1st August.

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#### INJURIOUS INSECTS OF THE GARDEN AND ORCHARD.

Professor Fletcher gave an address on "Injurious Insects of the Garden and Orchard." He said: Up to the present time we have had very little reference to insects, and I was congratulating you and myself that they were doing very little harm in this district. But I am sorry to say that I have many correspondents in this part of Canada, and during the past year, as previously, I have found that much damage is being done by insects, and that it is necessary to take some means to prevent loss by them. In my address before the Society last year, much of the ground that it will be necessary to summarize to-day was gone over in some detail. But there are general principles which it is necessary shortly to go over, so that in the discussion we may speak more intelligently with regard to the different classes of insects. I shall run over these, and shall draw your attention to some special kinds which have been



brought to my knowledge as attacking orchards in the eastern townships. There are in the world a great many different kinds of insects; but the general impression that everything that is an insect is injurious, is wrong, for there are just as many beneficial as injurious ones, and it is well to be able to distinguish between them. The idea of the ignorant is that anything that is an insect is something to kill, to put their foot on and destroy. This is wrong, because when we come to consider the nature of many of them, those which are most conspicuous are those which are doing us good. A very good general rule is, if an insect is active, give it a chance, because it is much more likely to be beneficial than injurious; and for this reason, if an insect feeds on a plant, there is no very great necessity for its having the means to run fast, as it moves quietly up to the food and destroys it. On the other hand, if it is a predaceous insect, or a parasitic one, it has to catch some other insect to feed upon; so that if you find a very quick-moving insect, the general rule is that it is beneficial. The whole class of spiders are beneficial; they feed on other insects. The large, conspicuous bright-spotted ground beetles are all beneficial; they all feed on other insects. The grasshopper does not move quickly; it hops a short distance like a flea; but it is a predaceous insect.

Whether an insect is beneficial or injurious depends very largely on what opinion we have of it. Some of the most injurious insects, as we call them, are the most beneficial when performing the work that nature gave them to do. There are probably none more injurious than the large class of wood-boring beetles, which attack lumber that has been cut in the forest. They destroy the timber that has been prepared for our use; but in a state of nature they are extremely beneficial, because they remove something which would, if left, be a great nuisance. If trees that are blown down in the forest were allowed to lie there, the forest would soon be stopped up with decaying trees. But in a state of nature, directly a tree falls it is attacked by the insects; so that beneficial and injurious are terms which are sometimes interchangeable.

Injurious insects may be subdivided into two large classes, and it is important that farmers and fruit-growers should understand that they are biting insects and sucking insects. I will mention one or two as explaining these terms. Caterpillars, which eat the leaves of plants, are biting insects; grasshoppers are also biting insects. Sucking insects we have in the hornfly and the mosquito. We have to devise remedies to prevent these injurious insects attacking our crops, and these remedies we classify under the heads active and preventive. Among the former is putting poison on the plants to be protected; or picking the insects, which means gathering the insects by hand, and destroying them. Picking is the cheapest method where labor can be secured at a low rate. One of the most injurious insects to the tobacco crop in the United States is the large caterpillar of a species of moth. It occurs in large numbers, but where labor can be got at a small cost, hand-picking is the best remedy. Preventive remedies may be classified as agricultural and deterrent. The former are such as rotation of crops—not growing or sowing on the same land the same sort of crop each year. All plants have special insects which attack them; so that if we grow wheat one year, the insects that feed upon it would multiply and attack the crop if grown on the same land the next year.

Therefore, when once crop next quently the common an food upon given. The quantities, There are o keep down best food, c to make it l Insects in t what is inju enemies, wit culturist do attack. A l attack from soon it is a noticeable o increase of t more suscept we shall pro

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Therefore, one of the wise arguments in favor of the rotation of crops is that when once we grow a crop which attracts special insects, if we grow some other crop next year they will not have the same food to thrive upon, and consequently their numbers will be decreased. The reason why certain insects are common and others rare, is entirely due to the amount they can secure of that food upon which they grow, thrive and increase. Many instances might be given. The Colorado potato beetle showed how, in cultivating the potato in large quantities, it got a large food supply, and spread over many areas of country. There are other agricultural methods, besides rotation of crops, which help to keep down insect attack, such as high culture, which is giving the plant the best food, cultivation and treatment it can have; giving it everything it needs to make it healthy. A healthy plant will make itself less attractive to insects. Insects in their first role are the scavengers of nature; they have to remove what is injurious. Therefore, when a plant lacks vigor it is attacked by its enemies, with the object of removing it. If a plant lacks vigor, and the horticulturist does not feed it and make it a strong plant, it is much more liable to attack. A little injury, by which its vigor is attacked, makes it susceptible of attack from insects. Who has not seen a weak cabbage and noticed how soon it is attacked. A large class of insects—plant lice—are particularly noticeable on an injured plant. Directly a plant is injured, we see a large increase of these plant lice, or aphides. When once a plant lacks vigor, it is more susceptible to attack, like a human being. If we are in a weak condition, we shall probably catch a disease in a district; if healthy we shall throw it off.

When insects attack what we want for ourselves, they become injurious, and we must find some methods of protecting ourselves against them. Many insects are beneficial, and this has led many people to say that it would be possible to allow nature to carry on her own provisions; that, as we have injurious insects which have special parasites that feed upon them, all that would be necessary would be to let them go on. But nature never grows large areas of one kind of plant, so that the special insects have to hunt before they get a sufficient food supply. But man, for his own convenience, grows large areas of material, so that the insects which feed on it have a large area, and increase enormously. There are many instances of parasites having been introduced into countries and cleared out the injurious insects. To-day it would have been impossible, on the Pacific coast, to grow any citrous fruits—oranges, lemons—had not the United States government imported from Australia a little parasite that attacked the injurious insects and destroyed them. First of all the orange tree was introduced, and it brought some insects which fed upon it, and they increased so enormously that all the orange groves would have been wiped out, had we not helped nature by bringing in the parasite which fed upon the injurious insect. When it came to California it found a large quantity of its food, and, that being so, it increased enormously, and in an incredibly short time, not two years, the trees were saved and the insect was almost wiped out. The parasite had increased so much that it had destroyed the injurious scale, and then it had nothing else to feed on; but it was enabled to exist by taking some of the closely-allied species.

Mr. Brodie—Is that the San Jose scale?

Professor Fletcher—That was one of those that was attacked, but it is not the one referred to. The San Jose scale is a different scale, and it has attracted attention because, contrary to everything anticipated, it has spread from the Pacific coast and actually occurred in British Columbia. But the smaller occurrence in British Columbia has ceased to exist. Our climate was not suited to it, and I don't think we shall be troubled in this part of Canada, because the isothermal lines don't reach to our borders. Care has been taken to watch it, and on its first appearance remedies will be applied.

Among the preventive measures against the attacks of injurious insects are early and late seeding. All insects have a certain time of the year for bearing; some bear two or three times a year. We may say that all insects take just one year to pass through their stages. First of all, there is the egg, from which comes the grub or caterpillar; then the chrysalis, and, lastly, the perfect state. If we know at what time these insects will bear, we can make the crop come up when none of them are taking it. The turnip flea passes the winter in the perfect state. Early in the spring it lays its eggs upon weeds of the cruciferous order, like the turnip, where they remain some little time. In the Ottawa district we find that the most successful method is to sow the turnips from about the 15th to the 20th June. Then they come up when the first brood of beetles has disappeared, and the second one does not appear until they have made sufficient growth not to be injured by the beetle. This insect attacks the first two young seed leaves, which are of very great importance to the turnip, and when these are injured, the plant must die. Let it make a dozen leaves, and cut some out, and it will still keep on growing, because these are true leaves; but the first two seed leaves are simply bags, or reservoirs, of food, from which the plant must draw the contents to feed itself. We must protect these seed leaves with great care, and this we can do by covering them with some poisonous material.

With regard to deterrent remedies, they are such as the application of materials to the trunks of apple trees to protect them from borers, nearly all of which are the grubs of beetles hatched from eggs, and which bore down into the bark, so that the tree dies. Nearly all these borers can be prevented by covering the trunks of the trees with some material which will prevent the eggs being laid there, or, if laid, will kill the young grubs.

As to the different classes of remedies; there is Paris green, or Imperial green, which contains about 60 per cent of arsenic, the remainder being copper. It is instant death to any insect that eats it. To say that insects eat it and live, is a mistake. In some cases it takes rather longer than some other poisons; it will sometimes take two or three days, but the insect that once eats Paris green, eats no more. I wish to draw your attention to what an exceedingly good material it is for this purpose. Its bright color largely prevents accidents taking place, and there is no chance of its being mistaken for anything else. I found last winter that there was some misconception with regard to Paris green. It did not seem to be understood by many farmers in Ontario that it does not dissolve to any extent in water. It is so little soluble in water that, though it would be a foolish and unwise thing it would not be unsafe to mix it with

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water, and then drink the liquid off the surface after the Paris green had settled. It is not an uncommon practice in Ontario for a farmer to mix Paris green and water, and then allow some one else to apply it to his potatoes, where he was using it for the cure of the potato beetle. The time found most convenient for mixing it is just before having dinner, and after the meal, when the stuff has settled, the men are sent to use it on the potatoes, without having been told that it is necessary to keep it stirred up the whole time. We don't make a solution of Paris green, but a mixture; and, although it is a heavy powder, it is impossible for it to be kept in suspension long enough to permit of its being put on the plant. People must recognise that the Paris green itself must be put on the plant, not merely the water. For the proper application of Paris Green, or other poison to plants, spraying pumps are necessary. There are small hand pumps, costing \$2.00 or \$3.00; then the Knapsack pump, and, larger still, those drawn through the orchard by horses. The material to be distributed is broken up by a force pump, and the finer the spray can be made, the better. The plant has not to be drenched; a very small quantity goes a long way, and the distribution is very even. When we should stop spraying is when the liquid drops from the foliage; if we put more on, a large proportion of the poison is carried off and lost. These active poisons are useful for many insects; but there are some classes of crops, such as cabbages, the foliage of which is eaten by man, upon which it is not safe to put Paris green. It is the practice in Canada to put Paris green on Cabbages; but we should draw attention to the fact that it is not a good practice. Although the danger is very small indeed, yet the number of deaths which every year occur from its use, make it unpermissible. I know the danger is small, but practice shows us that it is possible for people to lose their lives.

Mr. Brodie—Does Bordeaux mixture weaken the strength of Paris green?

Professor Fletcher—Not at all. Several experiments were made at Ottawa, and the result was that the Paris green was just as effective as if put on separately.

Mr. J. M. Fisk—With the Bordeaux mixture you can use more Paris green than without it.

Professor Fletcher—Oh, yes; but it is not well to apply Paris green to any vegetation that is susceptible to injury by arsenic without using quicklime. If you mix them in about equal proportions, all varieties of plums and peaches can be treated with much less danger to the tree.

The President—What do you recommend for cabbage—insect powder?

Professor Fletcher—Yes; undoubtedly pyrethrum, or insect powder, is the proper remedy, because it is harmless to man. If it be mixed with five times its quantity of common flour, and inclosed in a tight tin can for twenty-four hours, the whole becomes permeated with the insect powder, and when it is dusted over a tent, every caterpillar is destroyed.

The President—How many applications?

Professor Fletcher—About three is the most I have ever known. Sometimes



the insect powder is old, and has lost its quality; but it is now used so much that it is very easily obtained.

Another poison is hellebore. On the currant worm it is perfectly permissible to use Paris green for the first brood, which will much reduce the occurrence of the second brood. The latter appears about the time that the currants are full grown, and it is not then permissible to use Paris green, as a sufficient quantity might be left on the fruit to do harm, or the idea might get abroad that fruit-growers used it, which would not be desirable. When the leaves are about half-grown you will see the flies that produce the pest flitting about the bushes, and you will also see the little caterpillar. Use your remedy at once—Paris green for the first brood, and for the second, hellebore, which may be applied dry or mixed with water.

Here I may say a word about pumps. It is decidedly cheaper not to look out for a cheap pump. Undoubtedly, the best one you can buy is one in which all the parts fit well. I don't know, among the minor operations of farming, anything more annoying than spraying without proper materials or apparatus. Get a good pump at the start. In using Bordeaux mixture, which is now generally mixed with Paris green, we find that either brass or copper is essentially necessary for the good working of a pump, for, unless it is properly lined with one or other of these materials, you will find that it does not work well. The nozzle is also a very important feature. There are two nozzles in general use, the Vermorel and the McGowan. The Vermorel makes a fine spray, but for high trees the McGowan does the better work.

With regard to some of the insects that I have had complaints about in the Province of Quebec during the past year, the first, brought to my notice early in the spring, was the bud worm, which is a small insect that passes the winter as a caterpillar, on the trees, hidden beneath a little silken cocoon, under the bark. Before the buds burst they push their way out of the cocoon, and do much harm by attacking the buds, not only leaf buds, but cluster of fruit buds. Again, they frequently bore down the twigs that bear these buds. How are we to check them? The surface upon which we can put any protective material is very large. We must go to their life history, which is that those little caterpillars produce moths in the month of July, and these lay eggs which begin their new life in August. These young caterpillars feed on the leaves until the middle of September, and, therefore, it is the late spraying which gives us the best results. However, if we find them in the spring, much may be done by spraying at that time.

There is another little insect which occurred in two or three localities in Quebec, and which had been very injurious in Nova Scotia and some parts of Ontario, viz: The case-bearer, the caterpillar of which passes the winter on the trees. The young caterpillars are hatched in late summer, and pass through the winter quarter-grown. The best remedy is spraying early in the spring, either with kerosene, or coal oil, and soapsuds or Paris green. Good results have been obtained from both, but the sprayings must follow each other pretty quickly. The caterpillar bores a hole through the outer covering of the leaf, crawls in between the two skins, and eats out the cellular matter. By frequent

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The cabbage maggot, which takes the roots of cauliflowers and early-set cabbages during June, was very bad around Knowlton, Dunham and other parts of the Eastern Townships. We have found that a certain amount of good work can be done by pouring kerosene mixture among the roots. Good results were secured by mixing hellebore and water—an ounce to a pail of water—and pouring it around the roots. Last summer we found that a most successful experiment was simply to take a syringe, filled with water, move a little earth from around the root of the plant, and force in some of the water, which blew away the maggots into the surrounding soil. Before bringing the earth back again, I had a very small measure of special fertilizer thrown in around the root; it was distasteful to the maggots, and it helped the plant to make good growth. I shall repeat it this year.

The President—What fertilizer?

Professor Fletcher—It is called the Smiths Falls Perfect Fertilizer. I had it on hand, and tried it on some cabbages. Everyone has noticed that a cabbage may have the lower part of the stem and roots actually destroyed, but, if the weather be favorable, it will grow fresh roots and go ahead again. Some years ago, in Knowlton, experiments were carried out, and we found that in some cases where the roots had been destroyed by the insect, the plants were preserved by some wet weather. Late cabbages are not so much attacked as summer cabbages and cauliflowers.

Mr. Halcro—How do you account for scrubby roots?

Professor Fletcher—They are due to want of proper nourishment in the soil.

Cut-worms have been complained of. They are easily controlled; it is simply attending to them. Wrap a piece of paper around the stem of the plant when putting it into the ground, leaving it about an inch out of the soil, and it will prevent these worms doing injury. Another method is to tie up little bundles of any weed or grass, throw them into a pailful of Paris green and water, so as to get the poison thoroughly through them, and put them about ten or fifteen feet apart wherever they are wanted, along the rows of peas, beetroot, carrots, etc. I had some beetroot which looked splendid in the spring. I went away for about a week, and when I came back they were all destroyed. I immediately made some of these bundles and put them down. I had to go away again, and when I came back the effect of the remedy was quite perceptible, and at the end of the season there was quite a good crop, whereas these parts of the bed where the poison had not been put down were gone altogether. Cut-worms work at night, and great injury is done without the cause being recognized. At that time they are very small, but if we take these preventive measures we may checkmate them.

Mr. Brodie—I found a very good treatment was to put a little fertilizer around immediately after planting.



Professor Fletcher—It answers well some years, but in others nothing will keep them back. I think that is the reason it is so often said that salt will keep them away. If they are not very abundant it will, but if they are numerous it won't. There are many weeds which they will eat in preference to our crops; for instance, the common weed lambs' quarters, which, on one occasion, I found it well to let grow until the crops were out of danger.

With regard to the onion maggot, I have not been able to treat it successfully. The mixture of hellebore was not so successful with onions as with cabbages. Mr. Greenfield, of Ottawa, scattered dry hellebore along the rows of his onions directly they came up. We tried it, but not with so much success as he had.

Mr. Halero—I find that a good thing for them is liquid hen manure.

Mr. Brodie—I find rotation of crops answers well, and also raising the onions in hotbeds. If they are well started in hotbeds they won't be attacked so badly

Professor Fletcher—In good years these methods are good, as is also the liquid manure from pig-styes; but, at the same time, they are not so successful with the onion maggot as with the others. You can use carbolic acid and soap-suds as a wash for the foliage; it keeps the fly away, so that it does not lay its eggs there.

Mr. W. M. Pattison—I have found good results from spreading wood ashes over the plants.

Professor Fletcher—It helps the plants. Gas lime has also been used. These methods are all good when there is only a light occurrence; but when the insects are about out, we may expect disappointment. Carbolic acid and gas lime sprinkled over the beds have given good results.

With regard to plum curculio and the codling moth, and the caterpillar eats its way down inside the apple, and destroys the seeds. The curculio lays its eggs outside the apple, and where the beetle stings the apple to deposit its egg there is a depression, and the apples are rendered knotty and unsightly, and unfit for sale. The best remedy for the plum curculio is Paris green, or Paris green and Bordeaux mixture; but it does not give the same results as with the codling moth. Still, it is the best remedy. The old method of jarring the trees is not successful, because they are too large. The Paris green mixture should be made up of

Paris green.....1 lb.  
Lime .....1 lb.  
Water.....200 gallons.

when you mix Bordeaux mixture with it there is no danger of injuring your trees, as you have an excess of lime.

There is also the canker-worm, which appears before the buds open, and it has rather a peculiarity about it; for, whereas in Nova Scotia the eggs hatch before the buds open, in Western Ontario they don't. In Nova Scotia it is

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found that the season during which the eggs hatch is very much longer than it is with us in the West, probably due to the cooler spring they have. It is an injurious insect, and wants close attention when an orchard becomes infested; but having recognized that it is in the orchard, it is quite possible to clean the trees entirely, and they won't be attacked again for many years. It is a peculiar moth; for, whereas the male has large wings, the female has none at all. The caterpillars becomes full grown about midsummer. There are two ways of treating this insect; either spraying thoroughly, or, where the trees are too large for this, as in some cases in Nova Scotia, putting around them some mechanical contrivance, made of tin, or a band of paper, on which has been put fish-oil and printer's ink, or rosin and castor-oil. In Nova Scotia they use a pound of printer's ink to two gallons of oil, and this makes a mixture that will remain sticky from twelve to fourteen days. One man goes through the orchard with a roll of paper, one end of which he holds whilst he walks round the tree and measures it, after which he cuts off the paper and drops it. Another man then comes along with a hammer and tacks it to the tree, whilst a boy follows with a pail of the mixture and a whitewash brush, and applies the sticky substance to the paper. The insects stick to the viscid material, and the eggs, if any, are laid below that obstruction, so that it becomes an easy matter to destroy them, either by scraping the trees, or by spraying them with coal-oil and soap-suds.

The scale insects can be treated with kerosene emulsion, and as to the hornfly, you have probably seen less of it in this province than has been the case elsewhere.

Last year a grayish ophis appeared on the turnips in some districts and did much harm. In August and September, when hoeing, one stroke of the hoe would destroy a whole colony; it was tried on two fields.

Mr. Halco—Do the insects cling to the turnip?

Professor Fletcher—They are under the leaves and down on the stem.

Mr. Halcro—Do they develop all over the plant?

Professor Fletcher—Afterwards they do.

The President—Did you notice that the grasshoppers destroyed the leaves of the apple trees this year?

Professor Fletcher—I was going to speak about the grasshopper. In this part of Canada it has never been necessary to take any steps to control the grasshoppers, but last year they were exceedingly injurious to oats, tobacco and the leaves of apples. Grasshoppers don't occur sufficiently abundant every year for it to be necessary for us to take steps in regard to them; but in the Western States they find it necessary to use a "hopper doser," made of a sheet of galvanic iron, turned up at one side and strengthened at the ends with wood; it is turned up at the back about eighteen inches, and in the front about one inch. It is drawn over the fields by horse power in the early part of the season, when bushels of small grasshoppers can be destroyed very easily, whereas, if neglected, they get their wings and do much harm. Where they are

abundant in the Western States it pays for the Government to come to the farmers assistance and supply the coal-oil and water (I had forgotten to mention that) which is put in front of the "doser," and which destroys every insect that drops into it by suffocation. It will pay us, I think, in this part of Canada, as the grasshoppers have become so numerous, to attend to them and make use of "dosers."

Another wingless moth is a species that never leaves the cocoon in which it is hatched; but its caterpillars are very injurious, as they eat holes in the apples.

Mr. Brodie—Is it a worm with many feet?

Professor Fletcher—They have a tuft of hair on them. The remedy is spraying with Paris green. I am in hopes, from the small number of inquiries that I have had, that they have not been injurious here.

Mr. Brodie—There is a maggot that crawls on the ground and bores holes into the fallen apples, especially the St. Lawrence and also in melons. We have to put boards under them to prevent it boring into them.

Professor Fletcher—That is a milleped. They have been very troublesome during the last year, and not only have they attacked fruit, but in one carrot field they caused much injury by eating into the carrots, after which decay commenced. I have not got any treatment by which it can be controlled. It was also very injurious to celery.

The President—What is that little black caterpillar that hides in the rough bark of trees.

Professor Fletcher—It is the bud moth.

The President—It curls itself up.

Professor Fletcher—A rough, hairy fellow?

The President—Yes.

Professor Fletcher—I don't think that is an injurious fellow at all.

The President—You find him in the rough bark in the autumn.

Professor Fletcher—It hibernates there.

Mr. Roy—With regard to the cutworm, when you prepare your land in the spring prepare it well, and spread some straw on it. Leave it three or four days and the worms will come on the top of the land; then fire the straw and they will be killed. I have no doubt that this method would clean out a lot of other insects, because early in the spring the land is full of all kinds of little insects. My mother used to do it for the cabbages, and she always had plenty.

Professor Fletcher—It has been very much practised in the Northwest, and in Missouri and Michigan.

Mr. Brodie—That is where straw is cheap

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Professor Fletcher—From the nature of the insect, it will hide under anything.

Mr. Roy—When the sun is out, they will go and hide under the straw.

The Society then adjourned until evening.

#### THE PRESIDENT'S ADDRESS.

At 8 o'clock the Society met in the Theatre Royal, the gathering being attended by a fair number of the citizens of St. Johns, including some ladies.

The President occupied the chair, and in delivering the annual presidential address, he said :

LADIES AND GENTLEMEN,—

It is with a great deal of pleasure and satisfaction that I welcome you all to this our third annual meeting of the Pomological and Fruit-Growing Society of the Province of Quebec. Inasmuch as the second annual meeting, held in the historical City of Quebec, was a very important one, let us hope that this, which we are now holding in the fair town of St. Johns, situated between the eastern and western fruit districts of the province, south of the mighty St. Lawrence, may be of still greater interest and importance.

Let me say first of all, that, as a Society, we always welcome and encourage the presence of the fair sex at our meetings. In fact whether in summer, when they are arrayed like spring flowers in elegant and bright costumes, contributing not in a slight degree to the beauty of the scene; or at our winter meetings when all is cold and unpomological without, but cheerful and horticulturally pleasant within; their presence is always gratifying. Ladies can aid us very much in our work, and I am disposed to recommend that they should be represented on the Board of Directors, as soon as we can get one of their number to undertake the responsibility of the position. I am incined to think it would be a new departure, which would work to the advantage of the Society. Ladies in the country, as a rule, know more about house plants, flowers and kitchen gardening, than men do; and not a few, who are known to me, are well up in the science of fruit-growing, particularly the cultivation of small fruits. We have not yet been fortunate enough to secure the services of ladies as contributors to the literature of our annual reports, but of this we must not despair.

In casting a retrospective eye over the work of the Society, during the past year, we can, I think, congratulate ourselves on making some progress.

In the spring of 1895, a small distribution of plants and root grafts, for experimental purposes, was made to members. This work should be developed, and early each spring, the list ought to contain new and rare varieties of plants and fruit trees, from which the members might select a certain number for the purpose of experimenting with, in their respective localities.



The first annual report, in English, was issued in June last, and the French edition was issued lately.

As a fruit report it compared favorably with those of other provincial societies; but there is yet room for improvement and development.

The report was printed at the expense of the Government. In consequence of the necessity of printing it in two languages, the expense of publication is large. In the month of December last, the Society was informed by the Department of Agriculture, that the publication of the next report, in one language only, must be paid out of the annual grant. The matter was discussed at a meeting of the Executive, and your President and Secretary were deputed to visit Quebec. Accompanied by our Honorary-President, Sir Henri Joly de Lothbinière, whose interest in the Society is so well known, an interview was obtained with the Honorable Commissioner of Agriculture, who very kindly promised that our next report should be printed, in connection with the Agricultural Report, by the Government; the Society being supplied with the requisite number of its reports in advance. I am happy in saying that the second report is now being printed and will be issued as early as possible in the year. The work of the Society is much retarded and its members discouraged, if they cannot procure the reports before work is begun in the spring, and take advantage of the very valuable information contained in them.

Our summer meetings were held at Como and at the Trappist Monastery, at Oka. The two sessions at Como were well attended by people in the vicinity. Quite a number of new members joined the Society and altogether there is a feeling that an impetus has been given to fruit-growing in that district. At Oka there was a fair attendance, but not as large as we had expected. Some excellent and most interesting papers were read, followed by spirited discussion, in both French and English. The members were most bountifully entertained by the Trappist Fathers, and every opportunity was afforded for examining the extensive establishment in all its departments, as well as for sampling the cider and wine, for the making of which the Monks of the Monastery are famous. The Trappist Monastery is most beautifully situated on one of the hills of the Lake of Two Mountains, commanding a very extensive view of that lake as well as St. Annes and the Island of Montreal. The soil is admirable for growing fruit as well as cereals and other crops; in fact the great establishment is worth a visit at any time, and visitors, *of the sterner sex only*, are always welcome.

Our Society has taken up the question of seedlings, and has offered very substantial prizes for a good commercial winter apple. Perhaps there is no province of the Dominion which can produce so many excellent seedlings as our own Province of Quebec.

Our best known commercial apples to-day are nearly all of seedling stock, viz., Fameuse, St. Lawrence, Canada, Baldwin, McIntosh Red, etc. The early settlers raised seedling trees and planted seedling orchards. There was no attempt to graft in those days. No real, earnest and systematic attempt was ever made to discover the desired apple. The speaker has always felt, and has

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written on this subject before, that here, in this province, rather than in other countries, should we seek for such an apple. The survival of the fittest, fine in quality as Northern Spy, and a tree as hardy as Duchess. Truly this is a grand work for the Society to engage in. Our native Canadian apples are noted for their beauty and fine quality; therefore when the apple we are seeking for is found we may expect it to realize our expectations.

We have not in the Province of Quebec a "Bureau of Industries" similar to that in Ontario, whereby information as to the value and quantity of the products of the farm is given each year. We have no means, so far, of ascertaining the extent of areas of orchards and gardens under cultivation. Until such a bureau is established in connection with the Department of Agriculture of the Province, I would recommend that, at least every three years, this Society undertake to gather information as to the areas of fruit trees and small fruits under cultivation, through the secretaries of the municipalities, parishes and townships; and I am credibly informed that the Department of Agriculture would lead the Society great assistance to this end, by supplying the necessary postal cards, printed, for obtaining replies to the questions asked. I trust the incoming Board of Directors will take up this matter at an early date, for I believe it is very important to know just how we stand in the matter of fruit-growing, and no doubt the information gained will be most interesting material for publication in the Reports of the Society, and will give some prominence to the cultivation of orchards.

Lastly, I would make another suggestion, "that, as much as possible, the *personnel* of the Board of Directors should be changed a little every year. That is to say, the same Directors ought not to be re-elected every year. At least one-third ought to be new men, thus distributing the privilege, if I may call it so, of attending distant meetings at the Society's expense, in turn to different fruit-growers, so that all may become conversant with the working of the Society.

I know we have good men as Directors, who are deeply interested in the work, but I take it if some of these men were replaced by new ones from year to year, those who go out will work as earnestly and as interestedly for the Society's welfare as when they were members of the Board of Directors.

It is a wise precedent, which has been established in our Society, that the President should be succeeded each year by the Vice-President. But this precedent would, in my humble opinion, be more complete if it were understood that the retiring president should not be eligible for election to the Board of Directors for one or two years, but should retire into private life for a term. These ideas are merely thrown out because I apprehend, if adopted, they would work in the interests of the Society, by bringing into the circle of interested workers new blood, widening the sphere of usefulness of the Society and keeping out any chance of an idea arising in the public mind that the Society is being run by any clique or combination of men in particular.



## THE USE OF FRUIT IN DIET.

Mr. W. M. Pattison, Clarenceville, read a paper on "The Use of more Fruit in our diet." He said :

The topic chosen is one which, hitherto, has not claimed our attention, as a Fruit Growing Society, but, in selecting it for as brief a review as the subject would admit, I felt assured that it came within the sphere and functions of this society and personally interested every one present. The subject has pressed itself for some time on my attention from the fact that few realize, from practical experience, the benefits to be derived from eating less meat and a larger use of fruit in our diet. Anyone who will make a canvass through the country, will find that more than half of our farmers raise no small fruit and many who have orchards, sell their crop of apples and leave their families, in too many instances destitute of the very food conducive to their healthfulness.

Now, in support of the attitude taken in the premises, it is important, you will say, that the highest testimony should be adduced and we will call in the medical profession.

At the convention of the "Australian Federated Fruit Growers Association" in April last, Dr. Benjafield delivered a lecture on "Fruit as a Food and Medicine," which appeared in Appleton's Popular Science Monthly for September and was reproduced in medical and other journals in the United States.

The introductory remarks in the very able lecture would be of value for us to consider here. The Doctor says : "From Solomon all down through the succeeding ages, poets have sung the praises of the luscious grape and peach, and painters have sought to outvie each other in depicting the attractions of the apple and plum, and away deep down below all this we see through the whole animal creation, a developed instinct which teaches all to long after these beautiful fruits. Is this instinct wrong? Is nature a fool thus to make her creatures voice their needs? When you see the whole insect family swarming over and devouring our choicest fruits, shall we say that they do not know what is good for them? When we see pigs, horses, cows and sheep breaking down our fence, need we ask how they learned to love fruit? Ay, more, note the baby in the arms who screams for the rosy apple, and bites away at it, even with toothless gums, and as the baby grows into the boy how he will defy canes, and even police, so that he can get what he loves and longs for. The Creator is so anxious that this very necessary food shall be eaten by his creatures that he makes it beautiful to look upon, sweet and attractive in smell, and gives to it such varieties of flavor that the most fastidious can be satisfied. And yet, in spite of all this, the great mass of the people look upon fruit as a luxury upon which they can only spend odd pennies for the amusement of their children.

' Many parents will more readily spend money on injurious or even poisonous sweets than they will on good healthy fruit, and fashionable society will spend pounds on cakes, wines, and brandies, while they spend as many shillings on the very thing they need to keep them healthy—fruit.

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"And as for the amount of drugs swallowed which should be replaced in a great measure by fruit it is beyond my power to calculate. Millions, upon millions of pounds are spent annually upon mercurial and other purgatives, most of which would be quite unnecessary if the people would but look upon fruit as a necessary article of diet.

"The fruit-grower of the future must try to so educate the public mind that this state of things will be altered."

Another physician, Dr. Caldwell writes in the Memphis Medical Journal—  
 "On fruit as an agency in preserving health and putting off old age and physical decay," "In man there is a tendency from the cradle to the grave of a gradual process of ossification from earthy deposits consisting primarily of phosphates and carbonates of lime combined with other calcareous salts. After middle age the tendency becomes more marked and ends in senile decrepitude. The majority of all who pass sixty-five years suffer from these deposits, the structure of each organ is altered and elasticity gives way to senile rigidity, and sooner or later a vital part becomes involved. In considering the possibility of suspending the advent of old age, it is consequently a matter of the highest moment to ascertain what foods contain the smallest comparative quantity of those salts which tend to accumulate in the system and obstruct the vital processes."

The cereals, he contends, are found to be the richest in them and should be used in moderation.

"Hence a diet composed principally of fruit is best adapted for preventing or suspending ossification."

Dr. Benjafield tells us that—Garrod, the great London authority on gout and rheumatism, advises his patients to take oranges, lemons, grapes, apples and pears. Tardieu, the great French authority, maintains that the salts of potash found so plentifully in fruit are the chief agents in purifying the blood from rheumatism and gouty poisons.

That, at this period, fruit forms a larger part of our food than early in the century, we owe to the more general knowledge of the laws which govern man's organism and the necessity of obedience to them to avoid sickness, which is sooner or later the punishment nature imposes for their disregard.

Perhaps some present may remember when in the medical world Calomel was king and the Lancet his prime minister, fruit was regarded more as a supplement to a dinner or to serve as an embellishment to our tables in the relation which flowers occupy at present, very few knew its tonic properties when eaten before breakfast or other meals.

The most eminent physicians of our day now scoff at many of the remedial agencies of the past and claim, as we have seen that in fruit we have a substitute more beneficial in its results if regularly and judiciously used.

As the popular knowledge of natural laws extended fruit began to assert its proper place, hence the demand for it called for a larger supply. In furtherance, of the fruit-growing industry, organizations, like the present, unknown early in the century, rapidly came into existence throughout the civilized world.

Yet what a work is still to be done! When we see the great multitude of nostrums advertised for human ailments and sold and the large fortunes accumulated thereby, we must admit that there is still a cloud of ignorance to be dissipated and the work of Fruit-Growers' Associations in this direction can be made in the highest sense philanthropic.

Now the question presents itself what fruits successfully raised in our Province are of the greatest utility for food? The apple undoubtedly claims the first place.

With varieties of good keeping qualities it can be made to supply our wants the entire year. The pear and plum come in to supply a change over a limited period. The grape can be made available half the year, by precautions in storing it for winter use, and stands second to no fruit for delicious qualities and healthfulness. Fortunately, it is not as formerly an expensive luxury but within the means of all our population, if they do not choose to raise it. What higher testimony can be adduced that fruit was intended by the Creator to be used to a large extent in sustaining life than the regularity in which it comes in season? When we are satisfied with one variety, another comes in with its tempting special properties to gratify our desires.

Thus, in order, the strawberry is looked forward to with delight, so that when the season arrives we deplore its brevity. The raspberry, blackberry, currant and gooseberry supplying variety and each its special flavor to satisfy the animal craving for fruit.

The procession moves with regularity and freighted with abundance and as you have seen, science tells us why. Besides, wherever man's lot is cast he finds nature has placed by his side the food intended to supply his wants.

We see at the equator that fruit flourishes in the greatest abundance and luxuriance which signifies that this was intended for his main food. The supply seems to be wisely graduated till we reach the arctic circle where warmth giving food is demanded to sustain life. I think, it should appear to us all, that our lot has been happily cast in a climate, where nature's supply at hand, seems to indicate, that to sustain our bodies in the highest degree of health our diet should be proportioned, in this order, fruit, vegetables, and lastly meat. She gives us fruit in greater variety and tempting forms in the summer, when meat is less called for, and their grateful juices the most beneficial.

We will now consider the order in which fruit should be eaten at our meals, and, perhaps, the innovation suggested may meet with criticism. Nevertheless, I propose to reverse the present order of things and place fruit at the beginning of each and every meal.

Why has it become so general to begin breakfast with an apple, an orange or a pear? Because, those who practice it, find it beneficial. Then what is good for one meal is equally applicable to the others.

In conclusion, I have a word to the apple grower or to those who may contemplate starting an orchard, and hear the question of over-production, so often raised. A glut in the market would not occur, in respect to such a staple

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article of food as the apple, if the population of our country could be taught to realize its true value, as a daily food. The laws of political economy, which govern supply and demand, would then in a season of great abundance, tend to increase consumption and the restoration of prices in a measure.

I firmly believe that a large proportion of our foreign exports of apples, our population are suffering for the need of, and that the educational work suggested by Dr. Benjafield is clearly within the functions of the fruit-growers societies of our country.

The President—I am sure that we have listened to Mr. Pattison's paper with a great deal of interest, and what he says is, I think, very true. It has generally been understood that an apple eaten at night was a very bad thing; that we should not eat fruit at night. I was reading a short time ago an article by a celebrated New York doctor, who stated that an apple before going to bed—a mellow apple—was one of the best things a man could take; he slept well and got up fresh in the morning.

#### HOUSE PLANTS.

Professor Fletcher gave an address on "House Plants." He said: My subject to-night is flowers, and I am going to use every effort I can to prove to you that they are the most advantageous thing to grow, and not fruits, for, notwithstanding that you are a fruit-growing association, none of you dare say flowers are not of importance to you, because without flowers, you could not have fruit, and these flowers themselves are so beautiful that I don't know but we get more pleasure from them than the epicure does from eating nice things—the beautiful colors and the delicious odors, made to delight the eye and every refined faculty we have. I think the cultivation of flowers is an occupation that not only gives very much pleasure, but it has many points of value in the bringing up of children and the cultivation of men and women, it is, above all things, a refined occupation. I know of nothing that helps to make a home more beautiful and attractive than having someone in it who is fond of the cultivation of flowers with which to decorate it and make it attractive to us. In the characters of these who study this branch of natural history there is always a charming and apparent good nature and generosity, for the very cultivation of plants and the sympathy engendered with others of like desires brings us into contact with other people, and affords an opportunity for one of the parties to give something away. I never knew anybody who had flowers and enjoyed studying them who didn't, the very first thing after they met anybody of like tastes, look round to see "where can I get a slip to give you?" You have simply to say, "what a beautiful plant!" and they want to break off a branch and give you some. But in order that we may give to others, we must ourselves be able to propagate and increase our supply. In a country like Canada, where we are very much handicapped in this study, the experience of others is of use to us in knowing what is the best to grow and the best way of growing it. The experience I have gained since being in Canada is of value to me and to others, and, on the other hand, I receive much information from



others. Why do we grow flowers in the house? Simply because we wish to have them about us. But the best of our efforts can only make a poor imitation of the beauties they present in nature. To really understand the beauties of plants we must study them in their natural habitat; we must go to the fields, woods and prairies, and the more we study them, the greater charms they have. In every locality—the dry hillside, the rocky mountain or the snow-capped peak—we find plants growing there better than any other place; each finds the conditions best suited to itself. We find little dwarf plants which produce beautiful flowers, and which are visited by insects to have their seeds perfected. We find them only in these rocky districts, and we have to go up after them. As we come down the mountain, and meet with changed conditions, we find a different class of plants, and, farther down, on the sandy desert, we find certain plants growing to the greatest perfection. We cannot imitate much of that, but, unfortunately, we too often imitate the dry desert, where we have a hot, dry air, without a certain amount of moisture at the roots of the plants. Some people can grow plants much more successfully than others. I know some persons who can grow anything from a cutting, in fact, I suppose everything could be grown that way, if we had skill enough to do it. I think the underlying principle which allows us to make cuttings is simply that we must consider plants in the light of individuals, and allow that some have different natures to others. They must be treated as children. The most successful trainer of children is the one who considers the nature of the children he has to train, and the successful gardener is the one who considers each plant as having characteristics of its own which he must consider.

In treating of some of the old favorites, I think it would be better, perhaps, to mention what soils and methods of propagation are most satisfactory to them. The one idea that everybody should have is that, to grow plants satisfactorily in a pot, you must have good drainage. Another point I wish to draw attention to is that, in growing plants, we must not overfeed them; we must not give them too much of the condensed food which we find in plant food—nitrate of soda, sulphate of ammonia, and such other foods as are given to potted plants in houses. It more frequently happens that we give too much of this food than not enough. Those who grow plants successfully find that a solution of one ounce of nitrate of soda in three gallons of water will produce a fine growth of foliage, if watered to the plants once or twice a week. By thus properly attending to feeding them when young and getting them to a certain stage of maturity, and then gradually slacking-off, the plants will produce flowers, and we then get one of the results for which we grow house plants. We must not give them too good soil; but it must be comparatively good. One of the most important constituents is vegetable fibre, which we get in the peat in our woods, and which is better than the black muck that comes out of the cellars. It is a common idea that, because soil is dark, it is good, but that is not always the case. The muck out of the cellars often requires special treatment, either with lime or by exposure to the air, in order to make it serviceable. It is better to get leaf mould, which is more fibry, and mix it with one-fourth of sharp sand, such as is used in making mortar for house-building, and one fourth of well-rotted manure. You then have a good soil for most plants to grow in. The sand is put in to produce drainage. I believe a light, well-drained soil to be the best; no water lodges in

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it. In the bottom of your pot, for drainage purposes, you put some pieces of broken flower-pot, and then your light soil, with some plant food. When once the plant is well started, give it plenty of light, and, with proper treatment and training, you will get flowers at the time you want them.

Geraniums, I think, above all other plants, are the most satisfactory to grow in the house; they are one of the few plants which will produce flowers all the year round, for, by proper training and domestication, it is so altered in its nature that it is quite possible to make it begin flowering at any time you like. Suppose that you want them to bloom in January or February, you have got to train them in the summer, when you think they ought to be flowering; you have got to begin to train the plant about a month after it is put out in the spring. You put them out about the 24th May. Most people like to show their loyalty on that day, a day when they have nothing better to do. But just as surely as you plant your geraniums and tender annuals out so early, so certainly in most years you will be disappointed, because in the first week in June we have either a light or a heavy frost. If, however, you must have them on the 24th May, instead of taking them out of their pots, leave them in their pots, and when you see the frost coming, take them up and put them on the verandah for the night. We only have that depression for one or two nights, and after the 5th or 6th June you can put them out without the slightest danger. You may say, if it is a light frost, that you take your chance, which means losing about a month's use of the plants, which finally get checked and thrown back. If you will only have the patience to keep them under cover for about a week, they will go ahead and produce better flowers. The nipping by the frost may be so light as only to give a brownish tinge to the leaves, but they won't get over it for a month. If you want geraniums to flower in December and January, you must nip them back again, and prevent them flowering about the 1st July. The training begins about the 1st July, and, although later in the summer, you will have buds and flowers, you have to check the upward growth of the plant; it will produce side shoots that would begin to flower about September or October; and you will find they have many healthy shoots, with buds already formed, which will produce flowers in December and January. Those which you want to flower in February and March must be treated about August. In March your cuttings come in. Take your cuttings about August, stick them in, and when you take up your plants in the autumn they will be strongly rooted, and will produce flowers in the spring.

As to the number of plants to be put in a window, you will have greater success by growing a smaller number than if you try to have a lot all crowded together. By trying to have a great many, you will have a lot which will be no use to you, instead of a few which will be a delight to you and to everybody else.

We grow plants for the color of their blossoms, for their foliage, and for the delicious odors they give us. Very few geraniums are scented; but the cut-leaved ones are sweetly scented, and can be grown for their foliage. We have such a range of color in geraniums that it is well to think which is the best to grow. Taking the single reds, there is Colonel Holden, a large scarlet flower,



with the two upper petals cherry-colored, and there is General Grant, which has a small flower of an intense scarlet of the double reds, probably the crimson are the best for the house, such as S. A. Nutt, of the single whites, La Favorite is the best, and of the double whites Aymé Chevaliere holds its flowers the longest. Of the pinks, there is William Pfitzer, a double variety, which has large petals, touched with white, there is also Gettysburg, a new geranium of an intense cherry-color.

Besides geraniums, there are other plants which can be grown with great satisfaction, such as begonias and fuchsias, which do well where only a little sunlight can be obtained. They are easily propagated by cutting, and begonias can be propagated by simply putting them in water. The *Rex* begonia, with the large leaves, can be grown in pure sand or water. By simply putting the leaves in water, the roots will be thrown out. This is, probably, the easiest way to grow them. As soon as the roots are formed, the plants must be put in pots, with light soil, and they will grow.

There are also petunias. It is hard to get them to flower until March, but when once they begin, they become a blaze of blossoms until the time we put them out in the garden. Among annuals there are also mignonette and stocks.

All plants almost can be grown from cuttings, even to our woody shrubs, if we only have skill enough. We grow at the Experimental Farm large quantities of cedars and other conifers from cuttings made in the autumn and put in almost pure sand. They don't grow through the winter; they are put in a cold part of the greenhouse, the earth is kept just moist, and in the spring they have calloused over, a formation of growth has covered up the wound, and the cutting is ready to produce roots. In the second year they make nice little plants of about three or four inches high, and are very suitable for decorative purposes.

Among bulbs there are one or two favorites, such as hyacinths, tulips and narcissus, about which there is no secret in growing. A bulb is simply a form of condensed vegetation, almost like a bud. If you cut through a fruit bud, you will find all the little buds of the blossom already formed inside it. Cut open a hyacinth bulb, and you will find the leaves in miniature and the little spikes of blossom in the centre. If we want them to flower about Christmas, they must have about three months to form their roots. Put the bulb on good earth, with plenty of drainage, and allow it to produce roots. In order that it may not form any upward growth, but only root, we keep it in a dark cellar, where it is moist, and rather cold. When we want it to show its beautiful flowers we give it light and heat, and, having formed its root, it is able to produce flowers.

Then there is the Calla lily, which many people are fond of growing. In its native habitat it is a water plant, and grows on the borders of rivers. On the banks of the Nile it grows in great luxuriance, sometimes eight or ten feet above the water. The Nile overflows once a year, and then sinks down, so that the plants are left high and dry above; but the roots are beneath, in the damp soil. The leaves then die down, and the plant gets that period of rest which it is necessary all plants should have once a year. The Calla lily has to make its

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growth after we have grown it through the winter and each root stock has produced its force. Put it out in a rather quiet corner of the garden in the spring, but keep it growing a little. In August take it up and give it the strongest food you can, and it will begin to grow and produce flowers, and if you take off all the secondary shoots, you will get better flowers from the main shoot. It is one of the easiest plants to grow that you can imagine. The pretty way in which the Chinese and Japanese grow them is to put them in a basin containing water, as well as a quantity of large pebbles to steady the bulb, which feeds on the water. It has taken in sufficient nourishment the year before, through its leaves, to feed its flowers. It feeds on itself, undoubtedly, produces its flowers, and the bulb is exhausted. If you want to grow them next year, you will have to separate the side bulbs, grow them in soil, and allow them to lay up some nourishment; then you can grow them in water.

I have said that the way to really enjoy flowers and to appreciate them is to see them in nature. Last summer I went through the North-West Territories and Manitoba in July, and it was a year of exceeding beauty on the prairies. The general idea is that they are a sea of dry, brown grass, and nothing beautiful about them; but when I went I was fortunate enough to see them in an aspect of exceeding beauty. They were one sea of waving grass, of delicate green, and all through were flowers of the brightest and most intense colors, and all of a dwarf nature. As far as the eye could see there were acres of larkspur; then an area of orange lilies, and then lovely gaillardias. Many of the plants that we here cultivate in gardens we find growing there in the greatest profusion. The most charming of all the flowers, perhaps, is the prairie rose, which is about six inches in height, and bears eight or ten magnificent large single flowers, varying in color from intense rose to pale pink or pure white. Then there are patches of asters—prairie asters, golden asters and sunflowers. Perhaps, one of the most beautiful things was an alkali pond. I don't know of anything less beautiful to imagine than an alkali pond; but at the time I was there, it was rendered beautiful by nature. In the centre was a white patch of alkali; the edge was bordered with flowers that took on an intense crimson in the light of the sun; all round were scarlet grasses, and beyond were other flowers. As you got farther away from the Alkali you got other flowers. In each area you found a different kind of plant, until you got to the full floral blaze of the prairie, where the alkali ceased to exist. I was never more struck with the value of botany; it showed what was the value of the land. According to the alkali in the soil is its value for growing crops. The small amount of alkali that exists in the soil of Manitoba is one of the elements that makes it valuable. When you get further west, and there is too much alkali, you only get certain plants, until you get to the pure alkali, where nothing will grow. A botanist could have picked out what land was better for working than one who had no knowledge of plants.

Mr. Brodie—What variety of geranium gives the most ornamental foliage?

Professor Fletcher—The tri-colored geraniums are the most beautiful; but they are not much grown in Canada, because the strong sunlight destroys the yellow and the bronze. In England they grow to great perfection. Tri-colored

geraniums have a yellow or white background, and are zoned, or ringed. They present a very beautiful appearance. The only one grown here is Mrs. Pollock, the least beautiful of all. Last year I imported, at a small cost, four dozen of these geraniums, all different, and among them were some of very great beauty. In the greenhouse they do only tolerably well, because the colors are not so intense; but in the autumn they are very beautiful out of doors. Next year I hope to have sufficient to give some away. Some of the scented geraniums have very beautiful foliage. There is also Crystal Palace, the entire leaf of which is of a greenish-yellow, and Field of the Cloth of Gold, which has a leaf with a pale green centre, and a very wide golden border round the edge. They all stand our Canadian suns, and succeed very well. They make good border plants, and are very beautiful. Madame Saleroi is very beautiful. It never flowers, but it produces an enormous number of short, slender stems, three or four inches long, and is a splendid border geranium; it is one of the best for that purpose.

#### THE USEFUL AND BEAUTIFUL IN HORTICULTURE.

Professor Craig gave an address on "The Useful and Beautiful in Horticulture," using charts by way of illustrating his remarks. He said: I want you to consider, with me, something of the useful and beautiful in horticulture, and, perhaps, we had better take up the subject with the multiplication of the variety. Horticulturists have varieties, and the question arises, "How is a variety produced?" In nature it is produced easily enough; a seed drops on the ground, a plant springs up, and we have a variety. Horticulturists try to produce varieties, and I will endeavor to show you how they are brought into being. Make a cross-section of an apple blossom, and you will see on the outside some green organs—the sepals—bent out. They have a distinct function to perform. They are somewhat thick coverings, and they protect the unfolded blossoms from low temperatures and sudden extremes. On the inside of the section is a more highly colored portion—the corolla—which practically constitutes the blossom. It is made up of more delicate tissue than the outer covering. Then we come to the next set of organs, the male portion, in which is secreted the pollen, or fertilizing material of the blossom, and in the centre are the stamens. If you cut an apple in two, not horizontally, but laterally, you will find five divisions in the core, each division corresponding with one of the extremities of what we call the style, which is situated at the top of the pistil. In the stamens is pollen, which is made up of a brownish powder, and if we examine it under a magnifying glass, we shall see that it is composed of little brown grains of various forms. It is contained in the anthers of the stamens, and when these are ripe, it is thrown out, and falls upon the pistils, which are covered with a sticky secretion that catches it. It then germinates, the seed is formed, and the apple begins to grow. Knowing this, it is an easy matter for us to make varieties, because we know that it is necessary for the blossoms to be fertilized in order to get fruit. If left alone, they will fertilize themselves, and it is possible that they may be crossed from other blossoms, but it is probable that they will not. There is money in it. The man who originated the Wealthy apple for some years after its introduction received \$1,000 annuity from the Minnesota Government. His origination of that variety was somewhat in the line of chance. If

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we wish to produce a variety, we select a blossom before the petals have unfolded, and we take away the stamens from it. If we were to leave them alone fertilization would take place from other blossoms. Before the petals are unfolded, the blossom is not ready to receive the pollen, so we have to wait a day or two, and we protect it by taking an ordinary paper sack and tying it down over the flower, thereby controlling its condition. If we have a Northern Spy, and we want another good variety to mingle with it, we take, say, a Ben Davis, and gently dust the pollen on the pistil, replace the paper sack, and the operation is done. After three or four days, or a week, we remove the sack and see if the fruit is set, and if it is, the chances are that we have begun to originate another new variety. Suppose that the apple develops into a beautiful specimen, we save the fruit in the autumn, and plant the seed, and when the new plant grows we have a new variety. We cannot do this with vegetable seeds, because the type is fixed. You may ask why cabbage or tomato will represent the same variety when grown from seed. The answer is that, after generations of inbreeding, they become fixed, and the plants come true to that type. In the case of the apple I have mentioned, we have introduced new elements, and, probably, have a new variety which combines the qualities of the two parents. We grow the seed and get the young plant, and then we are in a hurry to see the fruit.

In connection with that we have found many interesting things, and some that are of value to the horticulturist. Some varieties of fruit are unable to fertilize themselves, and it is necessary to plant other varieties with them, in order that the pollen may be carried by insects. If we plant a Bartlett pear, and have no other pears in our orchard, we need not expect to get much fruit. In connection with this work, the horticulturist has found some things of use, as well as working along a line that is most fascinating and interesting. If every farmer taught one of his children to do this work, and the child took it up, it would increase the number of young farmers who would stick to the farm, instead of going into the city.

Having got our new variety, we want to know how to multiply it. There are many systems, from the simplest and natural one, as shown in bulbs, which grow little bulblets around them year by year. Another simple form is bending down a branch and making it root. All who grow black raspberries will notice the canes bend over gradually, until they reach the ground and become attached by roots, and you have a new plant. That system of layerage may be applied to the propagation of grapes, currants, and some of our beautiful ornamental shrubs. The roots are thrown out principally from the buds, which shows that the plants store up most of their food about the buds, where we should make a cutting—where the largest amount of food is stored. We take the cutting entirely away from the mother plant, and set it out by itself. The roots are thrown out from the joint.

We are indebted to Japan, that most interesting little country, for many plants useful and beautiful to horticulturists and I think none are of greater service in decorating our lawns than the hydrangea. It flowers with us about the 15th August, and the flowers remain on the plant until frost comes. They



change from delicate white to pink as the season goes on. They may be propagated by taking a cutting, same as off a geranium, that is, from the young growth, and if taken in August, and set in soil, it will readily root, and you can soon have enough plants for yourself and for your neighbors.

Another method of propagation is by the seedling tree, and if we want to see the new variety of fruit, the quickest way is to take a branch off that tree and put it on a bearing tree. Here is a practical point. With the condition of horticulture as it is at the present time in Quebec, where many old orchards have ceased to be profitable, there is no reason why we should not retop the trees with good winter sorts, and have them give us fruit for many years to come. I would not advise beginners to cut off a whole top one year and set in graft, but take off a part one year and the remainder the next year. You will ask me what are the principal points to be remembered. We should get our scions in the preceding fall, else they may possibly be injured by the cold of winter, store them in dry forest leaves, and pack tightly in a box stored in a cellar. Then, in April, when top-grafting may be commenced, take your scions and begin work. The whole operation consists in making a nice-fitting wedge of the scion. Then saw off your branch, and if it is an inch and a half or two inches in diameter, split it nicely with a strong-bladed knife and fit your scion nicely on, seeing that the inner portion of the bark of the scion and that of the stock come directly opposite. Then exclude the air by means of grafting wax—one part resin, two parts beeswax and one part tallow, melted together—and the operation is done, and in about two years we will, very likely, see the result of our work in producing a new variety. Every year I have varieties sent in this way. A man will write and say that he has a wonderful new seedling, and he asks me to try it. He sends a scion, and I put it on a bearing tree. I have over 110 kinds now fruiting, and all from grafts put in three or four years ago. This is a point which, I think, would be of use to some who have old trees.

Then there is grafting where the scion is inserted at the side, and this method gives a very complete and close union. Sometimes you can get a larger number of pears to grow by propagating them in this than by other methods. A slight cleave is made in the fruit stock upon which the scion is placed, and after the scion is placed in position, the part is wrapped with waxed thread, and grafting wax is placed round it. This is done in winter.

Another method in common practice is whip-grafting, by which the scion is merely spliced to a piece of the root, and wrapped with waxed thread, the scion having first had a piece sliced off, so as to form a kind of tongue. There is a good deal of controversy as to which is the better tree, one grown on a piece of root or one grown on the whole root. I have started fourteen different kinds of grafts, twenty-five of each kind. I shall have the trees taken up and photographed. It may be premature for me to express an opinion, but at five years there is very little difference between a tree grown from half a root and one grown from a whole root. The latter is somewhat more evenly divided, but as regards the amount of wood and the general appearance of the tree, there is very little difference. I think that if good healthy roots and scions are used you will get as good trees one way as the other. With trees from either buds or root grafts you should have no difficulty in this climate.

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The President—I understood Mr. Craig to say he would top-graft an old tree in two years.

Professor Craig—Yes.

The President—Is not that rather too much? I would take three.

Professor Craig—It would depend how closely you went to the stock. If you kept pretty well out, it could be safely done; but if you top-grafted branches two or three inches in diameter, you would remove, perhaps, too great a proportion of top in two years.

The President—You put the scions in forest leaves—damp leaves?

Professor Craig—No, not damp leaves; but use them as dry as you find them, and if you pack them tightly, sufficient moisture will be given out.

The President—Is the box in which they are placed closed up?

Professor Craig—Not necessarily.

A voice—Is not sawdust as good as leaves?

Professor Craig—I don't think so, sir. I have not found anything equal to dry forest leaves.

The President—Sand is good.

Professor Craig—I have used sand.

Mr. Brodie—Have you had any experience of growing pears on apple stocks?

Professor Craig—I have; but they don't make as vigorous a growth as on pear trees. You generally have a good many suckers to deal with when you grow fruit in that way; the stock makes an effort to throw out its own kind.

Mr. Newman—At what time would you cut the scions?

Professor Craig—In the autumn; a small degree of frost is not injurious.

Mr. Newman—How would you manage the pollen when crossing for seedlings?

Professor Craig—The ordinary books on the subject almost invariably recommend a camel's hair brush; but it is not a very good thing, as it uses up a large quantity of the pollen, and it is difficult to clean. If you were going to cross many varieties you would have to have a different brush for each kind. I would damp the end of a pencil or penknife, and use that.

The President—It is rather a nice operation, is it not?

Professor Craig—It is somewhat delicate, but not at all difficult. If you want to get the pollen, collect the blossoms two or three days ahead of the time you want to fertilize, and put them in water. The blossoms will expand, turn them upside down and shake the pollen on to a piece of paper.

Mr. Newman—When is the pollen ripe ?

Professor Craig—You tell that by the condition of the anther.

Mr. D. Westover—Do you recommend top-grafting of old orchards ?

Professor Craig—Where they are unprofitable.

Mr. Westover—Don't you think it would be better policy to cut the old trees down and plant again.

Professor Craig—Not where there are good, vigorous stocks. In Nova Scotia you will find numbers of orchards containing large trees that have been top-grafted after they were thirty or forty years old.

The President—Do they graft where the branches are two or three inches in diameter ?

Professor Craig—They do it all the way down to three inches.

The President—It makes a better tree.

Professor Craig—It may, perhaps, make a better shaped top.

Mr. Brodie—Would not the fact of cutting off large limbs cause decay in the tree ?

Professor Craig—If you cut them near the base. If the air is carefully excluded with grafting wax the wound soon heals over.

Mr. Brodie—I grafted some Yellow Transparents on a Siberian Crab, but the stock didn't seem to suit.

Professor Craig—The Siberian Crab does not, as a rule, make a good stock. Many things have to be considered in connection with the work. I merely threw out the suggestion, leaving you to exercise your own judgment as to stock.

Mr. Brodie—I was humbugged by a street pedlar. I bought, at a big price, fifteen trees of what were said to be Wealthies, but when they came into bearing they were not Wealthies. I have top-grafted most of them, and I find that they make a far better stock to work on than a Crab.

Professor Craig—The Crab is slow-growing, and the character of the wood is different to that of the apple.

Mr. Barnard—Where you have no scions in the fall, can you take them in the spring ?

Professor Craig—If the wood is perfectly white and clear, you can use them with safety, but if brown I would not use them.

Mr. Barnard—Can scions taken in the spring be grafted at once ?

Professor Craig—If they are uninjured.

Mr. Fisher—With regard to crossing and the production of seed life by grafting, the fruit of your graft is not necessarily the same as the apple you got by crossing the pollen.

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Professor Craig—No, no. And that brings up the point that we must not expect to get different fruit produced by the cross in the first season. If we use a Northern Spy, as the female, we get a Northern Spy apple. We get the change through the seed. You plant the seed, in which are the qualities of the two parents.

The President—I think we ought not to disperse without passing a vote of thanks so the Mayor for providing this very commodious hall for our meeting to-night.

Mr. Fisher—I beg leave to make such a motion. We have been very hospitably entertained, and we must feel very much obliged to the gentlemen of St. Johns who have taken the trouble to form a local committee and to make the necessary arrangements for us. I trust that this meeting may be of some advantage to St. Johns and the neighborhood, and that it will encourage people to enter into fruit-growing, a matter that we are so enthusiastic about.

Mr. Barnard seconded the motion which was unanimously agreed to.

The Mayor, Mr. James O'Cain, acknowledged the vote, and expressed the hope that the society would see its way to hold one of its summer meetings at St. Johns.

The President—I am sure we shall be most happy to return here, and as many of your citizens have joined the Society, they will be able to form a local committee, and we shall be sure of again receiving a hearty reception when next we come to St. Johns.

The meeting then adjourned until to-morrow.

FEBRUARY, 14th, 1896.

#### MORNING SESSION.

The Society reassembled at 9 o'clock in the Council Chamber, Fireman's Hall, the President in the chair.

Mr. R. Brodie submitted the report of the Nominating Committee, which recommended that the following be the officers for the ensuing year:

Hon. President—Hon. Sir Henry Joly de Lotbinière.

Hon. Vice-Presidents—Messrs. J. M. Fisk, Abbotsford, and R. W. Shepherd, Como.

President—Mr. J. C. Chapais, St. Denis, Kamouraska.

Vice-President—Mr. S. A. Fisher, Knowlton.

#### DIRECTORS.

No. 1 District—Mr. David Westover, Frelighsburg.

No. 2 District—Mr. J. M. Fisk, Abbotsford.

No. 3 District—Mr. James H. Carter, Massawippi.

No. 4 District—Hon. Sir Henry Joly de Lotbiniere, Quebec.

No. 5 District—Mr. Aug. Dupuis, Village des Aulnais.

No. 6 District—Dr. Grignon, Ste. Adele, Terrebonne.

No. 7 District—Mr. Edward A. Barnard, L'Ange Gardien.

No. 8 District—Mr. R. W. Shepherd, Como.

No. 9 District—Mr. R. Brodie, St. Henri.

Mr. Shepherd expressed a wish to be taken off the directorate, at the same time assuring the Society that he should in no way lose interest in it. He suggested that Mr. W. F. Halcro be appointed in his stead.

This was agreed to, and the report, as amended, was adopted.

Mr. Shepherd then vacated the chair in favor of Mr. J. C. Chapais, the newly-elected President, who, he was sure, would fill it with honor.

Mr. Chapais, whilst feeling deeply the honor done him, was fully aware that he was not the best man that could have been chosen as President. He should, however, with the help of the members, do the best he could for the Society, and he hoped that the year upon which they were then entering would see as good work accomplished as had been done in the past.

Mr. J. M. Fisk called attention to the necessity of certain amendments being made to the constitution.

Mr. Fisher moved that a small committee be appointed for the purpose of drawing up the necessary amendments, and that a copy of such amendments as they proposed be sent to each director a month before the next meeting.

This was agreed to, and Messrs. R. W. Shepherd, W. W. Dunlop, S. A. Fisher and J. M. Fisk, were appointed the committee.

On the motion of Mr. D. Westover, seconded by Mr. R. Brodie, a resolution of sympathy was passed with the families of Canon Fulton, Mr. Hugh McColl and Mr. R. W. Shepherd, senior.

#### PACKING AND SHIPPING APPLES.

Mr. R. W. Shepherd read a paper on this subject. He said :

My experience of shipping apples, for upwards of twelve years, has been confined almost solely to apples packed in boxes.

The boxes (as shown in the photo), with pasteboard compartments for holding the specimens, (in a similar manner as the commonly used egg case) contain about  $1\frac{1}{4}$  bushels. This system of packing ensures no doubt the safe transit of the fruit, and when packed in the orchard and the boxes nailed up there, no ordinary handling can injure the apples.

Wholesale, these boxes cost about 40 cents, complete. The package is a success, so far as the carrying of the fruit, has been demonstrated after twelve seasons, and again the past season.

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The old country people like to see care exercised in packing. Here is an extract of a letter from a Scotch gentleman, writing to Senator Ogilvie, who sent him a box of my apples, Fameuse.

"I have much pleasure in acknowledging receipt of a box of most beautiful apples, they certainly are the finest I have ever seen, both for beauty and quality and they are in perfect order. There has been great care exercised in handling of them, which is a pleasure to see, and it has been well bestowed, for there is not a flaw to be seen on one of them: and they are so exactly alike that you don't know one apple from another."

The Controller of the Duke of York's household, to whom a Montreal gentleman sent a box of Fameuse, took some of the apples to H. R. Highness, who immediately ordered a couple of boxes for himself, and, at the same time, expressed, a desire to have some Fameuse trees sent to him next spring.

Shipments made to the Army and Navy Stores the past season proved entirely satisfactory. They report Fameuse and McIntosh Red the best sellers, and Wealthy is also a favorite variety.

It will not pay to pack up, in boxes, any other than fancy bright red apples, of good quality. The three varieties above mentioned are the leading sorts for the first class London market, and we in this Province can grow them to perfection.

It is folly to pack such beautiful and delicate fruit in barrels, expecting them to reach the English market in good order. All apples packed in barrels must be tightly pressed down, and pressing means bruising, which means, also, rotting and decay—in contact one with another—before the fruit can possibly reach its destination. No matter how carefully selected and packed in barrels, bruising of each specimen must naturally occur to all apples of a delicate texture.

But packed in the compartment case the fruit is kept separate and unbruised, reaching the consumer in the primest order.

Messrs. Hart & Tuckwell of Montreal, have, the past season, been shipping largely Fameuse and other varieties, in boxes with bulging sides, each apple wrapped in paper. The experiment has been a decided success and Mr. Hart expects to ship before spring upwards of ten thousand boxes.

He says that the Englishman is slowly beginning to appreciate the advantage of getting apples which are packed in boxes. The first shipment of apples thus packed only averaged about \$2.25 per barrel, nett, but laterly the fruit averaged \$4.50 per barrel nett, i. e., after paying all charges from point of shipment, which is Hamilton, Ont. Mr. Hart's box costs about 18 cents each, and three and a half boxes to the barrel.

Great care is exercised in handling the boxes; an agent superintends the loading and discharging on and off the train, as well as on board ship, and on the other side of the water. Mr. Hart is convinced that it pays to pack up in this manner the best table apples, and, perhaps, no one in Canada is so well able to speak on the subject or who has so great an experience in shipping Canadian apples.



The box system of packing is well adapted for shipping in cold storage, and growers in this Province have, by this means, a market for their September fruit, Duchess, Alexander and other varieties. No doubt Red Astrachans by means of cold storage, on board ship, could be placed on the English market in beautiful order.

Since the advent of California fruit in our city markets, competing with our summer apples, and in fact almost throwing them out altogether, at least knocking down prices so low that growers of Duchess are discouraged. The success of shipping in cold storage is the most encouraging feature of the shipping business.

In this Province we can grow fall apples, which for beauty and quality cannot be surpassed by any other country, therefore we growers and shippers ought to take advantage of all our advantages, by packing our fruit in the most attractive manner to get the most out of the business possible.

There is no reason why our growers may not enter into a system of packing their best table apples in boxes, *in the orchard*, branding the boxes as a certificate of extra quality, and selling them to exporters, like Mr. Hart, at good prices. The exporting business requires great experience and considerable capital to carry it on successfully. Growers of apples are not all able or experienced enough to export apples on their own account; but if excellence of quality coupled with carefulness, is exercised in packing, a grower will soon establish a name for himself and readily obtain good paying prices from those whose business it is to export our fruit.

The old system of packing all sorts and conditions of apples in barrels, shipping them to the city to get whatever prices are going in a glutted market, must be improved, if success is expected to attend the cultivation of apples in this Province.

Professor Craig—How are the boxes sold by the English commission merchants, such as Woodall & Co., and Adams & Co.?

Mr. Shepherd—Mr. Hart showed me some correspondence on the subject at first, there was some prejudice against them, but now they are readily taken.

Professor Craig—I have had considerable correspondence with Woodall & Co., and they object very strongly to handling bushel boxes. It was an innovation in their trade, and it meant new methods and a new system of doing their business. They wrote and spoke, both in the press and privately, very strongly against them. But I fancy if there was a sufficient move made on this side, and the apples were in good shape, the prejudice in this respect would be overcome.

Mr. Brodie—In order to wrap the contents of 4,000 or 5,000 boxes in paper you would need to get an arrangement like that used for oranges.

Mr. Shepherd—By machinery?

Mr. Brodie—Yes.

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Mr. Shepherd—Mr. Hart tells me that they are not wrapped by machinery, but only graded. Mr. Hart has girls to wrap his fruit. He found that boxes were paying him so much better that he has employed a lot of girls to wrap the fruit and pack it in bulging boxes.

Professor Craig—What do you mean by “bulging boxes.”?

Mr. Shepherd—Mr. Hart's box has the ends stiff and two sides stiff; the other two sides are of thinner and tougher wood, and when the last apple is packed in, it bulges out and keeps the contents tight. There is a cleat of about three-quarters of an inch nailed on the outside of the box; so that when the boxes are piled bulging side to bulging side, they carry on the cleat.

The President—Your boxes are cheaper.

Mr. Shepherd—Not very much. If Mr. Hart's box gets to be well known in England, it would pay all growers to pack their delicate fruit in boxes of that character.

The President—Your box would be better for the most delicate apples.

Mr. Shepherd—My box carries perfectly.

Mr. Ball—Could we get these boxes?

Mr. Shepherd—I have no doubt that Mr. Hart would sell the boxes to you, if he were guaranteed that the fruit was of excellent quality.

Mr. Brodie—My opinion is that most railway companies will give through bills of lading; therefore, why not ship the fruit off to the Old Country at once?

Mr. Ball—Why should not the fruit-growers combine and send their fruit all together?

Mr. Shepherd—Certainly. Mr. Hart's box is not patented; he wants growers to adopt it. Pack the fruit in the box, and ship it in that way. We have much to learn in the way of packing; we are not up in it like they are in Ontario.

Mr. Norman Jack—Is there not a tendency to bruise the apple when packing a lot of boxes together?

Mr. Shepherd—That is obviated by the cleat on the outside. The bulge is very slight, not more than  $\frac{3}{8}$  inch, and as the cleat at each end is  $\frac{3}{4}$  inch, the bulged sides don't touch each other.

Mr. Ball—The same cleat is on the fruit boxes we get from California. Is there any place in Montreal that makes boxes like yours?

Mr. Shepherd—There is no place that makes them complete; I get the interiors from one place and the boxes from another. I am in favor of Mr. Hart's box for commercial purposes more than the compartment box. In 1894 I tried the compartment box for shipping Duchess to England, and I was very successful. They asked me to keep on shipping by every steamer, which I did, and I then continued with the St. Lawrence, but it is not successful on the English market.

It ripens on the voyage very much, and gets mellow, a condition which the English people don't like. Those I shipped in 1894 were fine fruit, but they were not a success; they didn't pay me very well.

Mr. Westover—How high is Mr. Hart's box?

Mr. Shepherd—It holds nearly a bushel. One of the objections of the commission agent was that there was no guarantee as to the weight of apples in the box; they varied. Mr. Hart says he will get over that by marking the weight of fruit on each box.

Mr. Johnson—If we get the apples to England in decent shape, we might get a better market. Do you think it possible to ship Peach and Yellow Transparent in that way?

Mr. Shepherd—It is a red apple that is wanted. It is no use sending others. The English market wants a colored apple.

The President—We may congratulate ourselves that there is a new departure in packing apples for export, and we hope that it will prove profitable to us here.

#### THE CULTURE OF VEGETABLES.

Mr. J. R. Ball, Knowlton, read a paper on "The Culture of Vegetables." He said:

In order to be successful in growing vegetables, as in every other line of business, one must be something of an enthusiast, must have a special liking for the cultivation of the soil. There is not that interest taken by farmers in gardening that there should be; it is too generally looked upon by them as drudgery, as something requiring a great deal of skill. It is true that there are many things one has to learn in order to achieve the greatest success in the care and cultivation of vegetables. Farmers of all classes of people should be able to supply their families with crisp, fresh vegetables throughout the summer months, but usually such is not the case; instead of a garden of early potatoes, a row or two of peas and corn, and they struggling for existence among a mass of weeds without cultivation and care, and this the farmer's home garden. Now all this should be changed. Show me a farmer who takes an interest in his garden, who loves to spend an hour now and then among his vegetables, and his flowers as well (for no garden is complete without them), and I will show you a man who not only enjoys life better by so doing, but is a better farmer and a better citizen. Mr. T. Greiner, in his most admirable work on gardening, says: "The man who wilfully and needlessly deprives his family of the privileges of a good garden fails in one of his foremost duties. He cannot possibly be a good husband, nor a good father, and he certainly is not a good Christian." Every farmer, I think, should devote at least one-half acre of land to the growing of vegetables and fruit, and I am confident that it would prove remunerative, as well as a source of profit, health and good-living, for certain it is that fresh vegetables and fruit as articles of consumption are much more healthy than pork, potatoes and bread, which too often form almost exclusively the farmer's diet from one year's end to another. A garden in which to grow vegetables successfully should not be

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surrounded by trees or buildings to shut out light and air, as is too often the case in villages and towns, but should be sheltered, if possible, on the west and north sides by a tight board fence; then, again, everything, vegetables and fruits as well, should be put in rows a good distance apart, in order to admit of cultivation by horse and cultivator, as the work and expense by so doing can be made much less than by the old method of hand-hoeing. Selection of seed and sowing of same is an important consideration. Unless we begin right we cannot expect success to crown our efforts. By all means purchase your seed from men in whom you can place implicit confidence, and be willing to pay a price at which the best seeds can be successfully grown. Poor seed is dear at any price, and a few cents saved in purchasing a supply may make a difference of a good many dollars at harvest time. Thorough preparation of the soil before planting or sowing the seed is also of great importance; it needs to be well pulverized and well enriched by well-rotted barnyard manure, or by some of the complete commercial fertilizers, or a combination of both, and thoroughly incorporated in the soil. Do not be in a hurry to plant; better wait until settled warm weather than run any risk of having your plants cut down by frost. Seed should be carefully sowed in drills, either by hand or by a good machine, such as the Planet Jr.: if by the former method, be sure and firm the soil well over the seed, either by foot, spade or roller; if sown by the drill, there is an attachment that does the work in the best possible manner. After the plants are well up, comes the most important point in connection with this subject, and that is cultivation. The late Chs. Downing once said if he was going to preach a sermon on gardening he should take for his text, "Stir the Soil." I can take a soil deficient in fertilizing elements, and by persistent cultivation I can succeed in growing a better crop of most kinds of vegetables than on highly manured land without cultivation. Cultivation, or the stirring of the soil by hand, hoe, rake or cultivator is also a necessity in seasons of drought. An inch or two of dry, loose soil acts as a mulch, which prevents evaporation of moisture from below. There are points in connection with this subject which I have failed to touch upon, as the last varieties to grow of the different kinds, of the combating of insect foes, of the making and management of hot-beds, etc. If, though, there are any questions to be asked in connection with these points, I will endeavor to answer them to the best of my ability.

Mr. Brodie (to Mr. Norman Jack)—The French-Canadian farmers keep better vegetable gardens than the generality of Old Country farmers.

Mr. Jack—I don't consider myself an authority, because in our district there is very little done. We go in for fruit-growing and dairying. There is no vegetable garden of any extent.

Mr. Shepherd—The French farmer has a nice little vegetable garden, whereas the English farmer has, very often, a very poor one.

Mr. Brodie—I noticed that between Caughnawaga and Huntingdon.

Mr. Pattison—It is the women generally who do the work.

Mr. Fisher—In connection with this subject, I would like to urge the use of the Planet Junior, or some such tool. I have been very much struck with

the comparative ease of cultivation by the use of such a tool. It is much to be preferred to the ordinary hoe. The person who uses the Planet Junior drill and cultivator can do his work in one-fourth the time that he can by hoeing or scuffling, and at the same time, the tool sows much better than can be done by hand.

Mr. Pattison—Where can the Planet Junior be procured?

Mr. Fisher—Both Evans and Ewing have them in Montreal. You can get them for about \$10 or \$11. I paid \$12.50 for mine several years ago; but I think they are reduced in price now.

The President—I have had No. 2 delivered at home for \$12.

Mr. Fisher—There is a seed-sower, a hiller, a plough, a rake and two or three different shapes of hoes go into it. It is a very light machine, and it works very easily.

Mr. Shepherd—Does it sow perfectly?

Mr. Fisher—I have never had the slightest difficulty with it. If you keep drawing it a little the while you are working it, you can do very much better work.

Professor Craig—I think the principal reason why there are not a larger number of vegetable gardens is the labor of working them. They are generally in a corner, fenced round, where horse labor cannot be got into them, and the area gradually dwindles down as the women or children feel inclined to pay less attention to the garden. I think it is a legitimate function of this Society to encourage the cultivation of vegetables to a larger extent, and it can be done by introducing better tools. If you don't want to purchase a drill, you can get hand hoes which are rigged with the same hoes as the other machines. You can straddle a row of plants, and go up each side, and you can change the machinery as you wish. The tool costs about \$3, and it does a tremendous amount of work, and if you work it with a backward and forward motion, it does more work.

Mr. Fisk—Are they on sale in Montreal.

Professor Craig—Yes, I may remark that if I were to advocate the cultivation of any one vegetable more than it is at present, it would be celery. Anybody who has grown good celery and enjoyed it, will increase the cultivation of it year after year.

Mr. Fisher—Perhaps you will tell us how to raise it.

Professor Craig—There is little difficulty about it. We have to remember that it germinates slowly. I saw it in a cold frame. We grow many varieties; last year over forty. They are started in a frame out of doors and the seed comes up somewhat slowly, and the plants grow slowly for a while, but if you give them light treatment of nitrate of soda, they come on quickly. Then they are pricked out into other cold frames, the plants being set about two inches apart, and there they remain until it is time to set them out in the ground. I

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sow the later varieties about May 1st for winter use. For home use, I think a good way is to set them in a trench in a double row. Have the rows about ten inches apart, and when you hill-up, you do double work. In order to get crisp celery, it is necessary to hill it up, so that the chlorophyl, or green coloring matter, is not carried down through the stalk. I never had sweeter celery, however, than when I wrapped it in paper. With the best plants it is better to pack a little earth round them by hand; that starts them growing tightly up together, and then the hilling can be done much more quickly. The dwarf plants require very little; in fact, I have seen them grown on the level—such as would be thrown up by a cultivator. In Michigan the men go along with broad hoes, on opposite sides, and draw the earth towards each other. In the fall it can be easily stored by trimming off the top leaves and packing it in boxes, with just sufficient soil to cover the roots. Have the leaves tightly together. If you pack just enough damp soil to preserve the moisture, the celery will go on drawing moisture from the soil, so that it will be necessary to give more water during the winter season; but be careful not to water the tops. Keep the temperature as low as possible.

Mr. Fisher—In making your trench, do you make it very rich?

Professor Craig—It is desirable to mix in rotted manure to a considerable extent.

Mr. Roy—What kind of soil—sandy?

Professor Craig—No; dark mucky soil gives you the best celery. As to varieties, Golden Self-Blanching is good for early use, but, for my own use, I would grow White Walnut which has a beautiful sweet, nutty flavor, and is unsurpassed for home use.

Mr. Brodie—We start celery plants about the end of February. We put up a few frames for early cabbage plants, which we sow six or eight inches apart. We put the celery in between, bedding lightly. As soon as we notice the cabbage plants get the long leaf, we plant them out, and leave the celery in possession.

Mr. Shepherd—When do you transplant the celery?

Mr. Brodie—As soon as there is no danger of frost.

Mr. Shepherd—Do you trench the plants?

Mr. Brodie—Yes, a little.

Mr. Shepherd—It has got to be good, deep soil.

Mr. Brodie—Yes; we put a little manure in the bottom of the trench, and cover it slightly before setting out the plants. The varieties I like best are: For early use, Henderson's White Plume and Paris Golden Yellow; for winter use, Dwarf White.

Mr. Fisher—The New Rose seems to keep pretty well.

Mr. Brodie—The red varieties keep much better than the green.



The President—Would you advise blanching it, in order to keep it late ?

Mr. Brodie—If, with late kinds, like New Rose, the blanching process goes on in the cellar, the plants will keep longer ; you can carry it round to the spring very nicely.

Mr. Ball—A farmer of Richmond, named Taylor, showed me a lot of celery in his cellar that was rotten. He said that he had had the same trouble for the last two or three years, although the first year it kept splendidly. I looked at it carefully, and it was a good keeping variety. I asked when he sowed his seed, and when he set out his plants. He said he set them in May, or about 1st June. I thought it was possible that the celery was too ripe before being pulled, and he said that might be so. It seemed to me that was the only cause. The cellar was a very desirable place, and he had the roots nicely buried in sand.

The President—I never set my plants in the trenches before July 1st. When pulling, I put on the bottom of the boxes three inches of sand, and wet it thoroughly. I put the roots on the sand, which I water about twice during the winter, and the celery keeps until the end of March.

Mr. C. Fisk—This fall we put celery in the cellar, putting it in gravel, and leaving the roots and leaves on. We have watered it several times, and it is growing, and is very, very nice. It was planted rather late in the garden, and was taken up rather late in the fall. It is a complete success.

Mr. Ball—The same thing is being practised by market gardeners at Granby. One of them placed his celery, when about half-grown, in the cellar, and it was the finest celery I ever saw, being crisp, tender and juicy.

The President—Perhaps Mr. Ball could tell us the best varieties of vegetables to grow.

Mr. Ball—In sweet corn, I don't know a better early variety than Early Vermont, and next to it is Crosby's Early. For late corn, I would recommend the Country Gentleman, though myself I cannot often get it far enough advanced to be of any use. As to peas, Nott's Excelsior is the best dwarf pea grown. It is about the same size as American Wonder, but it is much more productive. For a medium variety, I would recommend either Stratagem or Bliss Abundance.

Mr. Brodie—Have you tried the Heroine ?

Mr. Ball—Yes. For a late sort I don't think we need any, if we have the Stratagem.

Professor Craig—Do you find the later sowings of peas are liable to be affected by mildew ?

Mr. Ball—Yes ; until last summer I could never grow late peas.

Professor Craig—I mean the earlier sowings of the late varieties.

Mr. Ball—Do you find the later sowings of the late varieties escape best ?

Professor Craig—I do.

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Mr. Ball—What variety?

Professor Craig—The Telephone.

Mr. Fisher—About what time would you sow it?

Professor Craig—About the same time as the others.

Mr. Ball—For beans I would recommend Improved Golden and Golden Wax. I tried it two years ago, and it did not rust to any extent. Where beans rust, I would recommend Golden Eye Wax, which, I believe, is a rust-proof bean.

Mr. Brodie—What do you recommend as a green bean?

Mr. Ball—I don't raise them.

Mr. Roy—I think the White Pea Bean is the best green bean.

Mr. Ball—With regard to tomatoes, there are so many good varieties that it is difficult to say which is the best.

The President—When I was at your place some two years ago, you had a tomato you thought a good deal of; what was it?

Mr. Ball—Fordhook I. It is very productive, and is as early as Atlantic Prize or Early Ruby. It ripens all over at the same time.

Mr. Brodie—I find it is a poor cropper. I can make more money off a patch of Henderson's Ruby than off one of Fordhook

Mr. Ball—On my soil Fordhook I. is the best.

Mr. Brodie—For people who save their own seed, some of the tomato-growers around Montreal have got a strain that is hard to beat for earliness.

Mr. Ball—Among the bright red sorts, I would mention Matchless, which is large. Stone is a fine tomato, and also Royal Red.

Professor Craig—What about Lemon Blush?

Mr. Ball—It is a good tomato.

Mr. Shepherd—How do you succeed with cauliflowers?

Mr. Ball—I have been growing the Snowball, which, I find, is very plump, and heavy set. It is also very early. For home use, I would recommend sowing the seed in hills in the ground about 1st June, for a late crop.

Mr. Shepherd—What do you use for the green worm?

Mr. Ball—It never troubles me very much. I haven't had to use anything I had the finest lot of cabbage this year, 3,000 heads, and I was not troubled with the worm to any extent.

Mr. Shepherd—You must be more fortunate than we are, for we can hardly grow cabbage and cauliflower. The variety of cabbage I grow is All Seasons.

The President—What about early cabbage ?

Mr. Ball—I like Jersey Wakefield.

Professor Craig—What do you grow, Mr. Brodie ?

Mr. Brodie—I like Early Express, and there is another kind, English Etampes, which is a splendid variety. The Jersey Wakefield we have discarded long ago. I can grow Henderson's Early Summer almost as early as the Wakefield. Our first crop is Early Express, then Etampes, then Henderson's Early Summer, and then Henderson's Succession, the last of which I like to sow for a fall crop. Autumn King is a very good cabbage ; but if you want to grow cabbage for exhibition purposes, you want to get Marblehead Mammoth, of which I have had specimens weighing 40 lbs.

Mr. Johnson—Can you give us a pointer, Mr. Ball, on growing squash ?

Mr. Ball—I have grown many varieties. Almost everybody has his favorite. Hubbard squash is a good one ; but I find others that are more prolific and earlier, and that actually keep as long, or longer than the Hubbard, and which are equally as good. One is Bay State, which is green, and about the size of Little Turban. It is nearly two weeks earlier than the Hubbard, and is a better keeper. In early squashes there is Dunlop's Marrow, which is a great improvement on the Boston, since it is earlier and more productive. Another good variety is Warren, introduced by Greiner. It grows about the same size as American Turban, but it is a better squash.

Professor Craig—There is a variety called Perfect Gem, which is a splendid one for baking.

Mr. Brodie—We like Pike's Peak for a fall squash. It is a little later than the Hubbard.

Mr. Ball—Another variety of squash I like is the Faxon, which has only been introduced two or three years. The quality is excellent.

Mr. Brodie—With regard to sweet corn, Perry's Hybrid Sugar Corn is an excellent variety, and I think it should have been put on the list.

Mr. Ball—I wish to endorse what Mr. Brodie has just said. In every case I have known it has given entire satisfaction. There is nothing to equal it for making cows give milk. It took the first prize at East Farnham last year for field fodder corn. It is a sweet corn, and it is good for the table.

#### REPORT OF COMMITTEE ON SEEDLINGS.

Professor Craig read the report of the Committee on Seedlings. It was as follows :—

Your Committee beg to report that exhibits were examined as follows :

*From District No. 1*—Large russeted seedling shown by Mr. Jack. Recommended to be placed in storage for further examination.

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*District No. 2*—Exhibited 9 samples. Of these your Committee discarded four, on account of poor quality, bad form or unattractive appearance. The following were selected for further examination:—Seedling, Robt. Whitney, Abbotsford, medium-sized, striped, sharp-acid. Seedling, J. E. K. Herrick, Abbotsford, small, round, dark red, brisk, sub-acid. Seedling, Asa. Johnston, East Farnham, a small, conical-striped, mildly, sub-acid, fair quality. Seedling, W. S. Knowlton, Brome, small, round, red, attractive apple, evidently a keeper. Seedling, Hercule Bernard, Belœil, moderate size, Fameuse type, good quality.

*District No. 9*—Mr. Newman, one sample, medium size, oblate, striped, red, rather poor quality.

J. M. FISK,  
JOHN CRAIG,  
R. BRODIE, } *Committee.*

Mr. Brodie—When should the last examination be of these apples?

The Secretary—On 1st May, and they will be examined every month between now and then.

The report was adopted.

Mr. Johnson—Before we get away from the question of celery altogether, it does not suit my tastes, but I am bound to cultivate it. I think there is a variety which requires much less labor than is involved in hilling-up.

Professor Craig—Yes; the self-blanching.

Mr. Johnson—Is it not equally as good?

Professor Craig—No.

Mr. Ball—I have heard people who pretend to be experts say that they liked the White Plume celery the best; it was the best for eating. There is a new method practised by Greiner, of Lasalle, Niagara. He takes a level piece of ground, puts a good deal of fertilizer in it, and puts the plants six or eight inches apart each way, and by irrigation he succeeds in growing splendid crops of celery, without any blanching other than that obtained by growing it close together, and excluding the light in that way. I have grown beautiful celery in frames, or in hotbeds, by setting it close together in that way. Anyone who has a hotbed frame can grow it in that way, by putting three or four inches of dirt over the manure, and putting the plants six inches apart. They will strike down into the manure.

#### SOMETHING ABOUT SPRAYING.

Mr. Norman Jack, of Hillside, Chateauguay Basin, read a paper on "Spraying." He said:

In our orchard of 3,000 trees at Hillside, Chateauguay Basin, spraying is no child's play, but has become part of the routine of hard work that is added to fruit-growing in order to make it profitable. For three years we have been experimenting; the first season with only partial results, the second so marked,

being a spot year, that those who were incredulous became quite convinced of its utility. Last year we commenced the first spraying on the 9th of May, and finished on the 11th. The Bordeaux mixture was tested with the cyanide of potassium test in order to discern the proper quantity of lime. If short of lime, the cyanide solution turns brick-red and does not change color if sufficient has been added. We were especially careful to have the mixture correct, as the year before we had burned some of the trees. We have always used the Double Empire Spray Pump, mounted on a coaloil barrel and set in a cart. It has two ten feet lengths of discharge hose, and a return pipe which discharges a small stream of water back into the barrel to keep the liquid from settling. We used a graduating nozzle and a McGowan No. 7 for the small trees, working two rows at a time. On the large trees a Vermorel nozzle for the lower branches, and a McGowan mounted on a ten-foot pole for the tops of the trees. We used Paris green with this application for the curculio. The second application was made on May 29, 30 and 31, and there being no rain it was very efficient. The blossoms had fallen for three days when it was made. The third application was made on the 12, 13 and 14 of June.

The apples that were most benefited by the process were the Fameuse, St. Lawrence, Pomme de Fer and Pomme Gris, all of these varieties averaging seventy per cent. of first-class fruit, and some trees of Fameuse yielding ninety per cent. Some Fameuse trees that we condemned as past remedy, are now fresh, healthy trees, and St. Lawrence that were almost unsaleable was last season free from crack or spot. Nothing was more convincing than the effect upon Flemish Beauty pears; the rows sprayed produced large fruit, fresh green leaves, and vigorous growth of tree, while some trees of the same varieties that could not be reached for fear of trampling the growing crops, the fruit was cracked and blackened, and the trees lost their leaves early in the autumn.

Many questions are asked by the novice in spraying that are not easy to answer, so much depends on conditions, strength of solution, and faithfulness in applying. "I did not spray at all and my fruit is almost as good as yours," has been said, but he did not take into account the fact that the season was a dry one, with less fungus than usual, and that if it had been the reverse he would have been a heavy loser. Three years out of four, insects or fungus growth are likely to assail us, and spraying is the insurance money we pay against probable loss. It is not safe to draw conclusions from a single year, but to average the results of a series of years, and it is quite certain to conduce to the health of the trees, and by its distasteful nature, keep away many injurious insects even if not needed for the dreaded fungus.

In our orchard some trees are always left unsprayed, strangers can easily pick them out and they are a trial of patience in autumn to sort and pack, being chiefly seconds and culls. The sprayed trees are free from blight on leaves, and consequently greener, while the codling moth is pretty well destroyed by the Paris green. But our worst enemy is the plum curculio. It seems to defy even the applications I have mentioned, and so quickly does it commence its work of destruction that two years ago the apple blossoms fell on the 23rd of May, and three days after we noticed Duchess apples bitten by this pest, and in

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spite of Paris green and Bordeaux mixture, the apples fell in large quantities to the ground, all bearing the fatal mark. Cornell has promised to give this insect special attention.

During our experiments the last three years we have tried a number of different nozzles, the Eureka Graduating, Vermorel, Murney's, Boss and McGowan No. 7, each have points of advantage, but the McGowan being automatic cleaning, allows us to mount it on a pole and throw a fine spray a long distance. It is also very easily regulated. It would be of great value in a community if all the fruit-growers would agree to spray and do it at the right season. One fruit-grower of my acquaintance sprayed when the trees were in full bloom, thus injuring the flowers, and causing the destruction of the bees in the neighborhood, and it is yet an unsolved problem what is to be done about the fertilization of fruit blossoms, if it is found that spraying causes the destruction of bees. Co-operation and intelligent attention to the proper season for the work must be given to insure success.

It may not be generally known that the unsightly purple stain on the hands can be removed with lemon juice.

Our third year of spraying has been eminently satisfactory in its results and has convinced the most skeptical.

All our work is practical experience, and tests were the results of careful observations.

Pumps are being bought in our locality, which is now a noted fruit section. A year's experience has changed doubt into certainty, and it has been often a satisfaction to find

"That those who came to scoff  
Went home to spray."

Mr. Brodie—I agree with Mr. Jack about the destruction by the plum curculio; I find it is worse than the codling moth. It was only in cultivated orchards that I noticed it was so bad, probably because of pasturing a little in the other orchards, and the cattle eating up what falls. I must say that I like a brass pipe for holding up, one about five or six feet long. It wants to be a half-inch in diameter.

Professor Craig—A three-eighths inch gas pipe serves the purpose very well.

Mr. Brodie—I advocate the use of the pipe instead of a rod, because last summer I left some of my men to do the spraying. Holding up the rod is tedious work. They put the rod in the bottom of the wagon, and only syringed around the bottom of the trees.

Mr. Jack—I would strongly advocate the rod; but last year I got a McGowan nozzle, which, I think, is far better.

Mr. Johnson—At the organization of this society spraying was a new thing to me, and I was the only one in our district who took any interest in it. I purchased a pump, but I only half did the work. I found the pump was too small to work satisfactorily. Two years ago I found that it was impossible to



get a perfect apple off my American Baldwin tree. I gave it, in '93, two applications, and it improved the fruit wonderfully. In the spring of '94 I purchased a mechanical agitator, and I did the work pretty thoroughly this season, and the results were very satisfactory, especially with the Fameuse. From one tree I gathered four barrels of perfect apples. When it was hanging with fruit I defy any person to have discovered three dozen imperfect apples. The St. Lawrence were not quite so good, but they were the best apples of that kind we ever had. We have an apple, the Pride of Stanstead, or, Morey, which is not widely known in this country. It originated in Stanstead. The Wealthy also had some good fruit this year. I owe it all to a little simple spraying.

Mr. William Craig—I should judge your careful pruning and manuring had something to do with it.

Mr. Johnson—Well, I suppose it had; but, with the spraying added, we made a perfect success.

Mr. Jack—In regard to manuring, in '94 we had in our old orchard about 300 trees about thirty years old; in the younger orchard they are about fifteen. The old orchard had never had manure that I can remember, until this year, when we had some fine apples from it.

Mr. Shepherd—The trees only bear every other year, I suppose.

Mr. Jack—They are not so prolific. About eight years ago we shook down all our crop of apples, and in an old shed we had fifty to a hundred barrels that were not fit for cider. In '94 we took off some fine apples.

Professor Craig—Many of Mr. Newman's Fameuse trees were seventy years old, and had not given fruit that was saleable, except a very small percentage. I got a photograph of one of his Fameuse, which was a perfect pyramid in shape, the lower branches being bent to the ground with beautiful red apples. When you consider that these trees were in the best condition to be thoroughly and badly attacked by disease, being hemmed in and having bad air drainage, we can see the advantage of spraying thoroughly.

Mr. Fisher—I think Mr. Dunlop has had some experience in regard to spraying gooseberries and other fruit trees besides apples.

Mr. Dunlop—My experience in spraying has been somewhat limited, my orchard being a comparatively young one, and, so far, the varieties have not been subject to spot. But in growing small fruits I find we require to spray about as much as in older orchards of apples. Take gooseberries, for instance; the American varieties, and particularly the Downing, are liable to have their foliage injured by fungus. Unless we spray them, the foliage drops before the fruit matures, and it falls. Bordeaux mixture is a good preventive, and one or two sprayings in the season will do good. With regard to English gooseberries, it is almost a necessity to spray the greater number, not only to prevent mildew of the foliage, but also of the fruit. As a rule, shortly after the fruit sets mildew begins to make its appearance, and it is necessary to apply a preventive. I have tried liver of sulphur, and also Bordeaux mixture. I find the latter is the most effective, and it does not hurt the foliage so much. You have to be careful in applying it, because the fruit is principally under the branches, which you have

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to raise. With me it has been a perfect preventive—4 lbs. sulphate of copper, and enough lime to neutralize it. We used cyanide of potassium to determine the quantity of lime. With that treatment, where the climate is not too severe, I think you can grow English gooseberries with success.

Professor Craig—Do you find them profitable?

Mr. Dunlop—Yes. With regard to spraying for curculio, I have had no success. I have not tried it on the apples, because they are not much affected by it, for the reason, I think, that I have so many plums, and the insect prefers the latter. I have sprayed the plums with Bordeaux mixture, containing the necessary proportion of arsenic, until the leaves were all blue, and yet the insect worked on them as if they had not been sprayed.

Mr. Jack—With regard to gooseberries, would it not be a good idea to have a small pipe, with an elbow, so that it could be put underneath the gooseberries, and thereby save the trouble of a man?

Mr. Brodie—Have you ever tried the Knapsack spray?

Mr. Dunlop—No; you would require to work in a stooping posture the whole time, and it would be harder work.

Mr. Fisher—I have used a knapsack, and find it works all right; but it would be a great advantage to have a nozzle that would turn. I have one myself, and it works well.

Mr. Johnson—The graduated nozzle is highly recommended for leaf spraying; it will throw the spray upwards.

Mr. Jack—The Vermorel, I think, is better.

#### SHIPPING IN COLD STORAGE.

Mr. C. Newman—I wish to move that steps be taken to induce the Dominion Government to furnish cold storage this season for a number of shipments of apples, and that a committee be appointed to secure the carrying out of such movement.

This was seconded by Mr. R. Brodie, and agreed to, and the following were appointed the committee:—Messrs. C. Newman, R. W. Shepherd and the President.

#### GROWING APPLES FOR EXPORT.

Mr. Shepherd—We have not yet discussed the subject of the best varieties of apples to grow for export in cases and in barrels. It is a question we should discuss very thoroughly, because the young men who will contemplate setting out commercial orchards should have the benefit of the experience of those who have any experience to give. Our city markets are changed; we have the competition of the California fruit in August, and our summer apples don't command the prices they used to do. We must seek some other market. I think there is no difficulty, by means of cold storage, in shipping our summer apples to England in cases. The varieties I would recommend to cultivate for export in cases are Duchess, Fameuse, Wealthy and McIntosh Red. Those who



contemplate growing apples for export should cultivate red apples, because it is no use sending an uncolored apple to the English market. The Province of Quebec apples are the most highly colored of any, as I noticed at the Centennial Exhibition of '86. I was accompanied by Mr. Charles Gibb, and, when we entered the horticultural building, it was noticeable that the apples from the Southern States had no color, and those from the Pacific coast very little. You didn't get color until you got to Michigan, New York State, Maine and Ontario; but none could show the color that those from the Province of Quebec did. For shipping in barrels, for late keeping, I would recommend Canada Red, Canada Baldwin and Golden Russet.

Mr. Brodie—I have had no experience in shipping in boxes, only in barrels. My first shipment was of the Duchess—25 barrels—and they netted me about 75 cents a barrel more than I could have got in the Canadian market. I didn't like to send a second shipment, because they do not keep long enough on the markets. I sent about 50 barrels of Plumb's Cider, and they did very well.

Mr. Johnson—What is the type of Plumb's Cider?

Mr. Brodie—It is a large apple, and more conical in shape than the Shaker Pippin. It is an apple that will carry well. I have also shipped Alexanders with success. I have shipped St. Lawrence, but the people don't like them. I have shipped Wealthies with success, and Fameuse with fairly good success.

Professor Craig—Mr. Shepherd has brought up a very interesting discussion, and one which is worthy of our fullest consideration. There are apples here I would like to bring to the attention of fruit-growers, I would not say of all parts of the Province, but of those parts which are more favored from a climatic standpoint, for instance, Huntingdon and the Island of Montreal. I would recommend them to be grown on hardy stocks, top-grafted, of two or three years' old trees. Choose as stocks Fall Queen, Haas, or Talman Sweet. They are particularly suitable for the British market. They should be shipped in compartment cases or boxes. The first is Blenheim Pippin, or Blenheim Orange, an apple not very widely grown in Ontario, but in the district of Peterboro it is grown with much success; the climate is about as cold as that of Montreal.

Mr. Shepherd—What is the season of it?

Professor Craig—From October until about the end of February.

Mr. J. M. Fisk—It is an apple grown in England, and is a great favorite there.

Professor Craig—A car load sent from Peterboro two years ago commanded tip-top prices in the British market. I don't advise the varieties I mention to be widely planted, and I don't think they could be grown in many portions of the province, but we have some portions where the climate is suitable. The next variety is Ontario, a comparatively new variety produced by crossing a Northern Spy with a Wagner. It is of good size and takes good color when grown on a limestone soil. The season is, perhaps, not quite so long as the Northern Spy. The tree bears at five or six years old, and bears like the Wealthy. Among the long-keeping, dark red apples is Lawver, a variety that

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has commended itself to me for some years. At Ottawa we have a trying climate, more so than at St. Johns or than on the Island of Montreal. The Lawver has borne on sandy soil, for the last three years, a very fair crop each year. It is also known as the Delaware Red Winter. It, like the Ben Davis, is especially valued for its keeping qualities.

Mr. Dunlop—Is it of better quality than the Ben Davis?

Professor Craig—It is very much better quality.

Mr. Shepherd—I got ten root grafts about fifteen years ago, and I was unable to raise one of them.

Professor Craig—Then you certainly did not have the true Lawver, because I have no hesitation in saying that, when we can grow a variety at Ottawa, you will have no difficulty in growing it here.

Mr. Fisher—Where can scions be got?

Professor Craig—I will be glad, as far as our own scions hold out, to supply them to members of the society.

Mr. Newman—Is it as hardy as Ben Davis?

Professor Craig—I think about the same.

Mr. Johnson—What is the color of the Ontario?

Professor Craig—It is yellowish, covered with bright red.

Mr. Brodie—What about Larue?

Professor Craig—I don't think it is good enough to recommend its being very widely grown. It is almost too large an apple, and the quality is coarse. The trees come into bearing slowly, and it is not a heavy bearer when it does come in.

Mr. Johnson—Are you familiar with the Salome?

Professor Craig—Yes. It is an apple which, in the autumn, is dark green, but it ripens up in the winter. The tree is pretty hardy. It is a cooking apple primarily, and you could not put it on the English market as an eating apple.

Mr. Westover—In my section of the country Ben Davis is largely grown, and it is considered one of the most profitable apples. But something must be done in growing it in order to give it some flavor, the lack of which, I think, is the principal thing against it. My opinion is this can be remedied by high cultivation.

#### THE FINAL PROCEEDINGS.

The report of the Committee on Resolutions was submitted by Mr. Fisher. It put on record the society's deep regret at the loss suffered by the deaths of Canon Fulton, Mr. H. McColl and Mr. R. W. Shepherd, senr., and expressed sympathy with the families of the deceased. It thanked the City Council of St. Johns for placing the Council Chamber at the disposal of the society for the convention; it thanked the Mayor and the local committee for the trouble they had taken to make the necessary arrangements for the holding of the convention, and it thanked the retiring officers for their services.

The report was adopted unanimously.

The President, on behalf of the society, thanked Mr. Shepherd for his able work in its interests in the past, referred to the hard work in connection with the organization of the society done by Mr. Shepherd and the Secretary, and expressed the hope that the society would accord to himself that cordial support which it had hitherto rendered to occupants of the presidential chair.

Mr. Shepherd assured the society that whatever he had done had been a pleasure to him, for fruit-growing was a hobby with which he was attacked some twenty-five years ago, and the complaint had been getting worse each year. He hoped that the society would keep on increasing, and he thanked the President for the kind remarks he had made.

Mr. Fisher read invitations from the Hon. Sir Henri Joly de Lotbiniere and Mr. Caron to hold the summer meeting of the society at L'Islet.

It was decided to accept the invitations, and it was also agreed that the meeting should be held at St. John, Port Joli, L'Islet.

Mr. Fisher moved the appointment of the Executive Committee, and that it be composed of the President, Messrs. W. W. Dunlop, R. Brodie and R. W. Shepherd.

Professor Craig—I wish to ask the co-operation of the members of the society in a work I am carrying on. It is a matter that, in the near future, is going to touch the interests of fruit-growers. It refers to the blossoming period of fruit trees. We have found that certain varieties are not fertilized by themselves. The remedy is to plant beside them others which blossom at the same time. I am endeavoring to obtain a record of the blossoming period of each variety of fruit in different districts, from the Atlantic to the Pacific. I want to ask you who have fruit trees to be good enough to make such records of the blossoming as you are able. I will furnish you with the necessary books, and ask you to hand them in to me at the end of the season. I am extremely pleased with the convention which has been held here, and, although it has not been as large as some, the interest manifested has been satisfactory, and we have touched upon a large number of subjects of vital importance to fruit-growers.

The Mayor, Mr. O'Cain, on behalf of the City Council and the local committee, acknowledged the resolution of thanks, and said that, from what he had learned during the convention, he was convinced there was money in fruit-growing, and he thought that the district of St. Johns was suitable for the industry.

Mr. Smith spoke in a similar strain.

This concluded the work of the convention, and the meeting adjourned.

## THE POMOLOGICAL SOCIETY

### THE THIRD SUMMER MEETING

The Third Summer Meeting of the Society was held on the 24th September.

The opening session was held at 10 o'clock.

The President, Mr. J. H. ...

Among those present were Mr. ... culture; E. A. Bar ... P. G. Verreault, W. ...

### OPENING ADDRESS

LADIES AND GENTLEMEN,

In addition to the pleasure of being present at the Pomological Convention, I have the pleasure in presiding at this meeting, and where, for many years, fruit-growing has been a prominent feature.

Our region has a long history of fruit-growing in the Province of Quebec, and many men from there, with their experience in the Arctic regions. We have had on a day like this, the presence of men near the region of the Arctic, who have convincing proof that our visit will go away with us, and our region is not all that we have. Come and reside in it.

Our region certainly has made great agricultural progress, but are we any better than others? No, but we are rather against us, and it is those who reside in ...

# THE POMOLOGICAL AND FRUIT-GROWING SOCIETY

OF THE

PROVINCE OF QUEBEC.

## THIRD SUMMER MEETING.

The Third Summer Meeting of the Society was held at St. Jean, Port Joli, on the 24th September, 1896.

The opening session was held in the Town Hall at 8 p.m.

The President, Mr. J. C. Chapais, occupied the chair.

Among those present were the Hon. Mr. Beaubien, Commissioner of Agriculture; E. A. Barnand, A. Dupuis, Prof. Craig, W. W. Dunlop, Dr. Grignon, P. G. Verreault, W. Tremblay.

### OPENING ADDRESS BY THE PRESIDENT.

LADIES AND GENTLEMEN,—

In addition to the honor done me in electing me President of so fine a society as the Pomological Society of the Province of Quebec, I also experience a great pleasure in presiding over an arboricultural meeting in a district where I reside, and where, for many years, I have done my best to promote the interests of fruit-growing.

Our region has a bad reputation as regards climate in some portions of the Province of Quebec, especially in the west. A good many of our fellow-countrymen from there, when speaking of below Quebec, seem to be speaking of the Arctic regions. Well, for my part, I have been happy to be able to show them, on a day like this, that here we are still far from the pole, and are even very near the region of Montreal, since we can grow fruit which rivals theirs. I have convincing proof, and I am sure that those who honor us to-day with their visit will go away convinced by the fine exhibition of fruit you have shown that our region is not all it is said to be, and perhaps some of you may decide to come and reside in it. (Applause.)

Our region certainly made slow progress in fruit-growing as in all other agricultural progress. Does this mean that its inhabitants are slower than others? No, but we must not overlook the fact that we have a climate which is rather against us and which makes people timid in trying experiments which those who reside in the West can attempt with certainty. When we visited



the fine region around Montreal, we had some difficulty in believing that we could grow as fine fruit as they, but as soon as some of us decided to make some attempts, which were successful, the effect was soon observed, and if, in the past, we allowed ourselves to be left behind, we will now perhaps be rather hard to follow.

If our fruit-tree growing especially has made rapid progress in this province for some years, it is due to the efforts made by some of our fellow citizens for many years, efforts which for a time seemed useless, but which are now crowned with success. You must understand that I allude to the immense work done by the President of your Horticultural Society, Mr. Dupuis, in your region. I must say that all in the Counties of L'Islet and Kamouraska who grow garden fruits are Mr. Dupuis' pupils. I remember thirty years ago, at college, reading in the little *Gazette des Campagnes*, then a very modern publication, but which has still done its work, the first ideas given by Mr. Dupuis, on fruit-growing and I have much pleasure in stating that they first led me to think of growing fruit in our county. I do not wish to boast, it would not be seemly, but still to-day I have had an opportunity of showing what the lessons of a good master can do when he has a pupil, who, if not very talented, is at least willing.

The fruit I have shown, coming not only from my own orchard, but also from those of many of my fellow-citizens, show that we have made a good start in the path of progress, and that we will do much more in the future. Our region, from Quebec to Rimouski, certainly should be grateful to a good many who have been the pioneers of fruit-tree cultivation by following in Mr. Dupuis' footsteps, and we can now proudly point in the County of Montmorency to Dr. Bolduc and Mr. Barnard; in the County of Bellechasse to Abbé Paradis; in the County of Montmagny to Messrs. Blais, Marmette and many others; in the County of L'Islet to Dr. Lavoie, Dr. Dion, Messrs. Verrault, Duval, Dechène, Dupuis, Bourgault and others—there are so many that I cannot give all their names; in the County of Kamouraska to Mr. Dionne, the reverend gentlemen of St. Anne's College, Mr. Deguise, the notary, who has one of the finest orchards below Quebec; Messrs. Raymond, Langlois, Lavoie, Paradis Desjardins and Abbé Bourque; at Rimouski Mr. Begin, who also has an orchard whose products made a good show here to-day, although he inhabits a region less favored than our own.

All honor to these pioneers who have traced out the path in which our children may follow and surpass us. Why, gentlemen, do we speak to you so much about fruit-growing and horticulture generally? Unfortunately, many farmers are inclined to think that it is only an amusement and yields no profits. It is true that this prejudice is beginning to disappear, and that a day like to-day should fully convince those who have seen the results we have obtained of the practical importance of the question. Fruit-growing and horticulture are good and advantageous for the prosperity of the country for many reasons. In the first place there is a question of health in the cultivation of fruit and vegetables. Without being a physician, but knowing that there are probably some amongst those who are listening to me to-night, I can say that those who feed only on heavy meats are always exposed to diseases unknown to those who more judiciously select their food. Now, it is admitted that mixed food, consisting

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of meat, vegetables and fruit, is the wholesomest of all and the best suited to delicate stomachs. In countries where the population consume much fruit and vegetables it has been observed that they are much healthier than in countries where only meat is eaten. This is the first point to be thought of in recommending the cultivation of fruit and vegetables.

Another important point to be considered is that fruit-growing, far from being an amusement only, is a source of considerable profit. If you wish to know it ask the many farmers who, in past years, have sold plums as high as nine dollars a barrel, and who in bad years sold them at six and seven dollars, while those who are more skilful, by placing their wares in better shape, get from very ordinary plums as much as twenty dollars a barrel. This is, therefore, a source of considerable profit, and shows that fruit-growing is not only an amusement but very lucrative for those who devote themselves to it.

Another thing which struck me on seeing the Trappists' establishment at Oka, and that is: we complain, unfortunately, with reason, that in the Province of Quebec our people are rather addicted to the use of certain intoxicating liquors. Well, in future, the cultivation of fruit will enable us, if we know how to give it that direction, to produce sound, very agreeable and wholesome beverages which will prevent those who require to drink anything but water from being addicted to the degrading vice of drunkenness. Fruit-growing is destined in our province, as in France, to favor the production of cider which, is one of the wholesomest beverages, and, in France, comes next after wine. In France, where enormous quantities of wine are drunk, it is estimated that two gallons of cider are consumed to every three gallons of wine. So that if, in the Province of Quebec, we could manage to make cider—and we can do so since the Trappists make some of excellent quality—we will find a cure for the evil of drunkenness and that will be another great point in favor of fruit-growing.

Our Horticultural Society of the County of L'Islet has felt this from its very foundation, and has always given prizes for wine made from currants, cherries, raspberries and native grapes, and I must say that they are always the most agreeable prizes to be judged by the judges of your horticultural exhibitions.

There is still more. Horticulture provides work for every one on the farm. When children are still too young for field work they can work in the garden and learn a salutary lesson by seeing that there, as in everywhere, one must work to earn, only in arboriculture and horticulture the work is more agreeable and the lesson less difficult than in other kinds of work. As to the adults who devote themselves to it the great benefit they derive from it suffices to show them that it is to their interest to have it extend still more.

Your Horticultural Society of the County of L'Islet—I should say *our*, for I have long been a member of it—has realized the part it had to play and has even amplified it to an extent which seems beyond its sphere, for in the first years of its foundation your society encouraged re-forestation and this is a question which is of importance to us, because you are aware that already, in our old parishes, we have to pay very dear for fire-wood. Your society understood this, and for several years offered prizes for those who planted trees on



their lots, thereby obtaining astonishing results. I recollect being present at one of your exhibitions when a competitor proved that he had re-planted sixty acres with maple trees. This is truly a magnificent result obtained by your society.

Besides the making of wine and cider, already mentioned, you have encouraged the teaching of horticulture to your children, and this afternoon we had much pleasure in judging the work of young children whose grafting would do credit to professional arboriculturists.

There is another point in connection with horticulture which has long attracted your attention and which constitutes the most agreeable side of your exhibitions, I mean flower-growing. The ladies of the County of L'Islet are renowned for their artistic taste in the cultivation of flowers, and to-day we have had to give judgment on work which is a credit to those who have done it, because it rivals the best to be seen in the great provincial exhibitions of Ontario and Quebec. (Applause.) The ladies, already so attractive to the stronger sex, seem to wish to make themselves more attractive still by growing flowers so beautiful that it is hard sometimes to distinguish between the flower and the woman.

A proof that your Society is deserving of much consideration lies in the great attention paid to it by our political men of all parties without exception. Federal and local ministers have rivalled each other in munificence by granting prizes for the encouragement of your beautiful industry, which shows that they appreciate your work.

In pronouncing this word "work," I look as if I wished to say that the work is hard and deserves great encouragement, because it is hard. But the contrary is the case. I would not at all like to touch upon ground not within my competence, but it seems to me that from the very fact that the only man who lived for any time in a state of perfection, Adam, the father of mankind, was placed in a garden of delights and was the world's first gardener, it would follow that in spite of the penalties imposed by God on labour, since Adam's fall, horticulture has remained the pleasantest and easiest of all work. This is, doubtless, the reason why amongst horticulturists we always find men of the most agreeable and sociable character. This sociability was even pushed too far by the first man whom I called a gardener, for it led him to accept from his wife the apple he should not have accepted at the time. (Applause.) And yet we see that we retain no spite against the apple,—

A voice—Nor against woman either.

—since we have given it so much care and have succeeded in making it do such wonders in our region. And we are right, for the apple is certainly one of the wholesomest fruits, and one which, by the manufacture of cider, can contribute to do most good to our population.

In speaking of your success, and of the great work you have accomplished, as well as of the fruit you have shown us to-day, which has been the admiration of our visitors, I do not wish to lead you to believe that you have attained

perfection. One day whoever strives with his own century go on as long as he keeps his work done while he ceases moving in we are sure to be willing than in order that our past, so as to assist becomes our field

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perfection. One must never stop in the path of progress, for you know that nowadays whoever stops goes backwards, owing to the very fact that those who are striving with him in the great competition which is the characteristic feature of our century go on while he stands still. We are like a child in a swing. So long as he keeps in motion he goes higher and higher, but if he stops moving he is sure to remain at the spot whence he started, and then he has lost all the work done while exerting himself to rise. We are in the same position. If we cease moving in the path of progress, a movement we commenced so ardently, we are sure to return to the spot whence we started. We have more energy and willingness than that. We will not stop in the work we have begun, but in order that our progress may be felt it is necessary that those who are in a position to help us should continue, as they have been kind enough to do in the past, so as to assist us even more. The further our work extends, the greater becomes our field of action, and the more help we require.

There is at present before our Society a project for an experimental fruit-growing station such as exist in the Province of Ontario, which, I have no objection to admit it, has often given the example of great works well done by which we have benefitted. Now these experimental stations are destined to allow of our establishing in every place where fruit-growing has a chance of success a trial station, where, for a very moderate price, it will be possible, thanks to the labours of fruit-growers more advanced than others, to make a trial of different varieties of fruit from a commercial or industrial point of view, and this will enable us to make still more rapid progress than before.

To establish these experimental stations on the same footing as those which already exist in Ontario we will require aid from both Governments, the Federal and the Local. So I have already said we have before us in our Society a project which we will submit to those who govern us as soon as it is ripe, and I hope, in the presence of the Minister of one of those Governments, who has done us the honor of being present to-night, that our voice will be heard and that in future the aid so generously given us in the past will be continued, especially in the manner I have just indicated.

We have plenty of energy, plenty of good-will and of initiative; we wish only to go onward. Provided the road be but a little prepared, we will continue in the path of progress in which we have already proceeded so successfully. If we undertake to devote all our efforts to promoting the interests of this fine industry, which we represent, I trust that those who are in a position to help us, and to allow us to go still faster, will do so, and after expressing that hope, gentlemen, I resume my seat.

Mr. Chapais—Mr. Beaubien, I would be very happy, and I now speak in the name of the Society I represent, to hear you to-night on the interesting subject now before us, and I hope you will be good enough to give us some words of encouragement.

## ADDRESS BY HON. MR. BEAUBIEN.

MR. PRESIDENT AND GENTLEMEN,—

I am very glad to be here to-day because I am called upon to applaud the efforts of courageous and persevering men. Your Pomological Society was the pioneer here; the oasis in the desert. It collected the plants and trees which could be found only within a very wide radius, to acclimatize them in the first place and then to cause them to be appreciated and loved. If the traveller interrupting his long journey in the desert through burning sands, rests in the shade, how grateful is he not for the verdure which he will enjoy but for an instant. The good services, the benefits obtained from your society, will be of longer duration. You have given the good example which will pervade your territory. With labor and perseverance you have spread your knowledge throughout the country, and I have observed, from what your President said just now, how many disciples you have made. Do you see the future in store for you?

You remember the remark often made and which reminds me of Lafontaine's fable. An octogenarian, a man of eighty years old, was planting trees. To build would have been well, but to plant trees at his age! Nowadays, so long after the fable was written, there are many people who say: Why plant trees? I will not see their fruit nor repose in their shade. Think, gentlemen, that you can, as the same fable says, enjoy your reward at once, because you can say that in planting that fruit-tree, which will be for your children or grandchildren, as the octogenarian said: "My grandchildren will be indebted to me for this shade." You can say to yourselves as he did: "I have worked for those who will come after me and I now have in my heart the fruit I can enjoy and which is granted me, that of being able to be useful." When you place in the ground the seed of that tree which will perhaps live three or four hundred years, you can say: "I there commenced doing a service to my fellow-creatures."

I have sowed, Mr. President, allow me to say so, I have sowed elm seeds with my own hands, and I have elm trees near my house which I cannot enclose with both hands, so large are they. (Applause.) And yet I am not old, at least I think I am not; it is very likely imagination and I don't know whether my friends are of my opinion. I have a small forest around my house which I have planted with my own hands, and while enjoying its shade I say to myself: "How happy I am. I enjoy the work of my hands; it is a great reward which God gives and now my children and grandchildren are indebted to me for that shade." Moreover, if you take away the trees I have planted, the property would not have one-fourth of its present value. You can add to the value of your residences on the shore of your great river by planting forest trees near them. This means, Mr. President, that with these ideas in my mind, I will do all I can to help your society, to help the Pomological Society. Let me tell you that I am waiting for a second report from it. I have already asked it for a report on the evaporators used in Ontario and we have it. I have also asked it for a report on the dryers used in the State of New York; I have not yet

received it. You have my power. You can even claim to be the son of your forefather. You are industrious in your work. You are always right. You may all your wives and husbands or your children have fruit on your tables, raspberries, etc.

You can manage your trees, which you can dispose of at will.

The object of the Society is to cultivate fruit, and to propagate the seeds of plants, those which you can use, it, maintain it, in

The Province of Ontario, especially in the West, where we have the climate and sufficient quantities of grapes as in Western France, and drinking our

This, Mr. President, could give I gave to your meeting. I do not always succeed. At present new branches they would study branch; yours will

The President's encouraging words to Dupuis for his part.

## REMARKS

Mr. Auguste Dupuis, the following paper

Our distinguished fruit trees will grow on the soil. The majority of them are neither hardy nor does the liquid which they produce hinders the liquor. The burning droppings of these trees are a combination of these



received it. You may be sure that I will favor your industry as far as lies in my power. You may succeed here in having an abundance of fruit. You may even claim to be able to make good wine and good cider like the old Normans, your forefathers. You may preserve your dry fruits, you, ladies, who are so industrious in making your hopes pleasant for your unworthy spouses. You are always right when you have what you require. As regards garden fruits may all your wishes be gratified and with a small evaporator which your husbands or your sons will put up on the pattern to be supplied them, you will have fruit on your table throughout the year, such as apples, pears, strawberries, raspberries, etc., and also vegetables, tomatoes, celery, etc., etc.

You can make cider. You can even use the apples which fall from the trees, which you do not eat and cannot sell. All these industries are at your disposal.

The object of the Pomological Society is to lead the people to properly cultivate fruit, and your society undertakes to point out to you the best kinds of plants, those which grow in the country and can best stand our climate. Help it, maintain it, increase the number of its members and secure its prosperity.

The Province of Ontario has a more favorable and a milder climate, especially in the Niagara peninsula, where peaches are grown; but, gentlemen, we have the climate which makes strong and healthy men, we have fruit in sufficient quantities and if we may regret that we cannot grow peaches and grapes as in Western Ontario, we will rejoice while eating our Fameuse apples and drinking our cider, which we will learn to make before long.

This, Mr. President, is what I wanted to say to-night. The little advice I could give I gave this afternoon, but I thought it my duty to come this evening to your meeting to applaud and encourage the efforts of your directors. Efforts do not always succeed, but be not discouraged, the future may be prosperous. At present new horizons open up to us; our country population have said that they would study agriculture and improve their farming methods in every branch; yours will participate in this awakening.

The President thanked Hon. Mr. Beaubien in the society's name for the encouraging words he had spoken to the meeting, and called upon Mr. Aug. Dupuis for his paper.

#### REMARKS ON THE GROWING OF PLUM TREES, ÉTC.

Mr. Auguste Dupuis, Village des Aulnaies, County of L'Islet, P.Q., read the following paper:

Our distinguished colleague, Mr. Battel, writes:—"The plum tree is one of the fruit trees which are the least particular as regards the quality of the soil. The majority of soils fit for cultivation suit it, provided always that they are neither too clayey nor too damp. Clay which is compact to excess hinders the liquification of its branches (the wood does not ripen and freezes). The burning drought of light soil gives it jaundice. Nevertheless, a combination of these two extremes would produce good soil for plum trees; a



mixture of lime and black soil would have the same effect. The plum tree has this much in common with other stone fruit trees that it prefers to manure, light and salty fertilizers and those containing saltpetre. Moderately damp soils suit plum trees. This condition added to the climate is the chief cause of the insects met with in the northeast, west and southwest of France."

These remarks equally apply in Canada to the districts of Montmagny and Kamouraska, where the plum tree suffers in the light soils of the beaches and hills, while it grows very well in the cool and fertile sand called *good sand* for potato growing.

In clayey soil the plum tree does not grow well without some additions; it must also be planted at the surface and sand and mould must be brought to cover its roots. It is very useful in sandy soils to put clay under the roots in the fall to mix with the sand in the spring.

The use of mud from the beach by Mr. A. M. Dechene, M.P., in his orchard at the *Manoir des Aulnaies*, has had a marked effect on the fruit trees. Their leaves have become dark green and the fruits are finer.

Plum trees which produce abundantly (sometimes excessively) need a rich and cool soil in which they may obtain the necessary nourishment for forming their fruit, throwing out shoots and sturdy buds, and blossom bearers for the following spring. If the plum tree loaded with fruit is not sufficiently manured and suffers from drought, it frequently dies after yielding its crop, or becomes so weakened that it yields no fruit for a year or two; sometimes it blossoms and sets its fruit, which becomes yellow and falls at once because the tree has not a sufficient sap and juices to bring the fruit to maturity. We frequently attribute the dropping of the plums to scalding or sunstroke, while it is generally due to the weakness of the tree. To preserve in a plum tree, loaded with fruit, all the strength it needs to yield regularly every year, the soil at the foot of the tree must be covered with a good layer of manure, which must be covered in its turn with straw or shavings or any other material which will retain the dampness about the roots. The most favorable time for this operation in the district of Montmagny is the beginning of July.

The experiment has been made here, and the results everywhere have been satisfactory. Some orchards so treated have yielded fine crops every year for several years.

He who devotes himself to fruit-growing must strive to have fruit crops to sell every year and not every two or three years. The French and Belgian gardeners have found means by this system of manure and straw in summer time to get fruit every year. They fear only frost during the blossoming season, and storms in the autumn.

Still as all plum trees will not bear fruit every year, we must just make a good selection of varieties when we plant, and be guided by the results of the experiments made in our neighborhood.

Amongst the most productive of fruit trees and of those most likely to produce yearly, the Lombard, Bradshaw, Pond Seedlings, Reine Claude and St.

Cloud, occupy these varieties yielded abundantly from four to eight bushels per tree. The litter of beach sand will start from the roots and retain the dampness in winter.

You will probably find that a portion of the plum trees is true that a report on the E. not maintain his L'Islet, where he Moreover, let us grow wild plum Simoni and Bot not hardy. They are sacrificed.

Let us leave West, where the delicious native as well as the ton, which are v prices.

Last week a from 30 to 35 native white plum The Bradshaw. \$1.40 to \$1.50 for outside competition.

Some days at the Quebec market cents for six gallons eight cents; freight.

I have these Friday, the 4th of baskets of plums 24,000 pounds each the Niagara Valley sacrificed. Although Quebec and glutted on the market from

This shows that put us on our guard.

Cloud, occupy the first rank. In the Village des Aulnaies we have plum trees of these varieties (from 28 to 30 years old), which, planted in light soil, have yielded abundant crops regularly eight years running, each crop being worth from four to eight dollars per tree. These plum trees were protected with a litter of beach hay or refuse, of straw, sawdust or shavings. The litter should start from the trunk of the tree and spread as far as possible all around so as to retain the dampness of the roots in summer and protect them from frost in winter.

You will pardon me if I repeat that litters are most useful for the protection of the plum trees during those two seasons here to the east of Quebec. It is true that a distinguished horticulturist has denounced this practice in his report on the Experimental Farm for the year 1895, but that gentleman would not maintain his criticism if he visited some of the orchards of the County of L'Islet, where hardy plum trees loaded with fruit are protected by good litters. Moreover, let us not be guided by official reports in which we are advised to grow wild plums, such as the Chickasaw and others, as well as the Japanese Simoni and Botan. These plums are bad; the Japanese Simoni and Botan are not hardy. The fruits of all these plum trees are so little sought after that they are sacrificed on our markets.

Let us leave the growing of these varieties to our friends in Ottawa and the West, where the European plum trees perish, and let us keep and plant our delicious native blue and white plums, Damascus, Reine Claude de Montmorency, as well as the Bradshaw, Lombard, Pond Seedling, Reine Claude and Washington, which are very properly sought after and for which we get the highest prices.

Last week at Quebec, Western plums (the wild red variety) were selling at from 30 to 35 cents for three gallon baskets. The blue Damascus and the native white plums were selling at from \$1.00 to \$1.10 for three gallon baskets. The Bradshaw, Reine Claude, Imperial, Pond Seedling and Washington at from \$1.40 to \$1.50 for three gallon baskets. These prices were kept up in spite of outside competition and the low price of all fruits.

Some days ago a large consignment of fruit from the United States came on the Quebec market in boxes and baskets. Plums and peaches were sold at 92 cents for six gallon boxes, leaving the American growers a net profit of only eight cents; freight, duties, commission and auctioneers absorbed nearly all.

I have these figures from Mr. R. Borden, fruit importer. At Montreal on Friday, the 4th September, there were six auction sales of fruit: 17,000 boxes and baskets of plums, pears, peaches and grapes were sold; seven car loads of 24,000 pounds each of the above came direct from California, New Jersey and the Niagara Valley. This enormous quantity of fruit from the West was sacrificed. Although a considerable portion of these fruits were shipped to Quebec and glutted the market, good Damascus plums were nevertheless worth on the market from \$7 to \$7.50 for barrels holding three bushels.

This shows the superiority of those plums over the Western ones, and should put us on our guard against all advice to grow plum trees bearing bad fruit.



If we wish to have paying orchards let us apply to the Department of Agriculture of our Province, which will give us impartial and enlightened information.

Thousands of trees have been planted in the Province of Quebec which have not resisted the climate or which produce bad fruit, thereby causing enormous losses to farmers, which losses might have been avoided if these worthy people had consulted the Department of Agriculture, founded expressly for the purpose of watching over agricultural interests.

While on the subject of new plantations, we must remember that the young plum trees must not be forced by manuring in summer, and the soil about the tree must not be disturbed after the month of July. In our severe climate we must avoid promoting a late growth of the branches which frosts of October destroy or weaken, endangering the future life of the tree. The end of October is the best time for putting manure on the foot of young trees.

This manure, mixed with the soil in the following month of May, renders vegetation vigorous in the spring, and the branches formed at the beginning of summer become hardy enough to resist the hardest frosts of winter.

Pear and apple trees require the same treatment as plum trees to form strong and fruitful trees.

In 1877 I gave the Montreal Horticultural Society a description of the success obtained here with the Lombard, Bradshaw, Yellow Egg, Washington, etc. plums.

The same trees are now as high and thick as apple trees; they are full of vigor, bending under the weight of splendid fruit.

You are all invited to come to-morrow and judge for yourselves at the meeting of the Pomological Society. Next to these old plum trees you will see Pond Seedlings, St. Cloud or Abany Purples, Washingtons, Reine Claudes and Lawrence Favorites, etc., a little younger but all bearing fine, delicious fruit.

On seeing these trees and their fruit, you will, I am sure, admit that it is unfortunate that the experiments made here during the past 30 years were not made by the Government, for, in that case, thousands of orchards of plum trees would have been planted which would now be producing a considerable portion of the plums consumed in the country.

Yes, the want of experimental stations under State control is greatly felt, as the President of the Pomological Society has just said. As early as 1870 the late lamented Mr. Charles Gibb, of Abbotsford, had demonstrated the necessity of horticultural experimental stations in the Province of Quebec. He cited the beneficial results obtained in all European countries where the Governments had established horticultural stations.

Let us hope that success will crown the efforts of the Pomological Society of the Province for obtaining from the Government the establishment of horticultural experimental stations in the eastern portion of the Province where individual

experiments have been limited a sphere to those who, at the expense of new varieties

In conclusion, I would urge farmers by every means

In the present year, the *Commerciale et Industrielle* of Troyes, France, has organized a Society of the Friends of the Orchard. He mentions the encouragement of the Government says:

"At the meeting of the statesman, Mr. ... fellow countrymen, their farming to the time, equally diminished then in a depressed orchards, the traditional national convention of 1889 estimated and marked their interest. Department of Agriculture, in spite of the arboriculture has been fruit for the markets, established abroad."

Here, in Canada, encouraged fruit prizes at fruit exhibitions given by Honorable Mr. B. the Honorable S. Honorable Mr. Dechene, member

In the name of the men who, leaving us, encourage us, to

This culture, during periods of depression, revive prosperity. Lawrence, east of the growth of plum



experiments have already been productive of much good, but within too limited a sphere in spite of the disinterested reports published every year by those who, at their own expense, have devoted themselves to the acclimatization of new varieties of fruit deserving of merit.

In conclusion I deem it advisable to read you the advice given to European farmers by eminent men for the promotion of fruit culture.

In the preface to that very practical and instructive book, "*La Culture Commerciale et Bourgeoise*," the distinguished author, Mr. Charles Ballet, of Troyes, France, our colleague and Corresponding Secretary of the Horticultural Society of the County of L'Islet, demonstrates that every farmer should have an orchard. He mentions the efforts made in Europe and in America for the encouragement of that pleasant and profitable culture, and amongst other things he says:

"At the moment when our first edition appeared, a distinguished English statesman, Mr. Gladstone, at the Hawarden Agricultural Convention, urged his fellow countrymen to take up fruit culture and trade in fruit if they wished their farming to pay and to hold its own with foreign competition. At the same time, equally distinguished Belgian economists stated that agriculture, which was then in a depressed state, would be saved by increase in meadow land and orchards, the trade in fruit being moreover favored by Belgian laws and international conventions. And the United States, which, at our Universal Exposition of 1889 estimated their annual production of fruit at fifteen million dollars, marked their initiative steps by the formation of a Division of Pomology in the Department of Agriculture at Washington. In France and in adjacent countries, in spite of the burdens on property or the duties which affect transactions, arboriculture has continued in its onward path by planting new trees to bear fruit for the table, for pressing and for distillation, and, by improving the markets, establishing with a view to providing food at home or for exportation abroad."

Here, in Canada, our most distinguished statesmen have strenuously encouraged fruit culture by grants to Horticultural and Pomological Societies, by prizes at fruit exhibitions, such as those which have to-day been so generously given by Honorable Mr. Fisher, the Minister of Agriculture for Canada; the Honorable Mr. Beaubien, Commissioner of Agriculture for the Province of Quebec; the Honorable Sir Henri Joly de Lothinière, Controller of the Revenue; the Honorable Mr. Tarte, Minister of Public Works for Canada, and Mr. F. G. M. Dechene, member for the County in the Local Legislature.

In the name of the Horticultural Society of the County, I thank those gentlemen who, leaving aside their differences of opinion in politics, unite together to encourage us, to urge us to practice fruit culture.

This culture will assuredly help farmers who take it up, to tide over, those periods of depression which but too frequently occur in agriculture and will revive prosperity throughout the Province, but, above all, on the banks of the St. Lawrence, east of Quebec, where the soil and exposure are most favorable to the growth of plum trees.

Mr. Barnard—We have listened with much interest to what Mr. Dupuis has told us in connection with the cultivation of plum trees. I hope, and I think it is the desire of the meeting, that Mr. Dupuis will have time to complete his work and send it to us so that we may publish it and derive the greatest possible benefit from it.

#### THE POSSIBILITY OF GROWING FRUIT IN THE COUNTY OF CHICOUTIMI.

Mr. William Tremblay, of Chicoutimi, then read the following paper:—

When a person undertakes to read a paper on a subject it is generally because he is quite familiar with the subject. However, such is not my case, for far from being an adept in fruit culture, I may say that I am but a novice, and that I have come here more to learn than to teach, and it would be better that I should listen than speak.

Another reason which induces me to be silent is that I come from the north which is not precisely the direction whence light comes. However, having been invited by Mr. Chapais to address you and tell you what I have done, I thought I should accept the invitation, and this explains why I am here to-night.

I have heard several persons to-day observe that the climate of the Saguenay is much colder than yours. This is a mistake. However, I cannot reproach you seriously for that opinion, as it exists even with us, and, so far, those who have tried cultivating apple-trees in our region and who have been unsuccessful, have attributed it to that cause. As I have frequently had occasion of travelling in your midst, I have observed that your climate is exactly like ours, and seeing that fruit was grown on the south shore of the River St. Lawrence, as far down as Rimouski, which is situated as far north as Chicoutimi, I said to myself that if the people on the south shore succeeded so well in this kind of cultivation, why should not we; there must be some defect in the trials hitherto made; some mistake either in the selection of the ground or of the varieties planted, and I decided to make an attempt in my turn.

The first thing I did was to take note of the temperature. In the winter of 1891-92 I took in the *Electeur*, which gave the thermometrical observations taken at Quebec every day. I had a thermometer myself and I found that the temperature at Chicoutimi was generally one or two degrees lower. This fact had moreover already been ascertained by the Quebec & Lake St. John Railway Company. Observations taken by the officials of that Company, at Roberval, in the winters of 1886-87, 1887-88 had established that the mean temperature at that place was the same as at Montreal. The heat is sometimes greater and the cold also, but the mean for the year is the same. When Hon. Mr. Beaubien had fruit trees distributed through the various counties of the province, he sent some to Chicoutimi. Moreover, he sent Mr. Auguste Dupuis, your worthy President, to superintend the planting. If that gentleman were to make another trip there I am sure he would remember me, for if ever a man was bothered it

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was he. Throughout his whole visit I did nothing but ask him questions connected with his speciality. I am convinced that if he ever comes to Chicoutimi he will carefully avoid me.

Amongst the trees sent by Hon. Mr. Beaubien I got a Duchess apple-tree and a Bradshaw plum-tree. As these trees wintered well I purchased from Mr. Dupuis, two years ago :—

Yellow Calvilles.....	9	Red Astrachan.....	2
St. Lawrence.....	8	Golden Russet.....	2
Yellow Transparent.....	3	Grimes Golden.....	1
Russian Transparent.....	3	Hislop.....	3
Peach Apple.....	1		

I lost some of these trees. All my Yellow Calvilles, my Yellow Transparent, my Russian Transparent, my Peach apple. My Hislops and two of the St. Lawrences are strong, and several produced fruit this year. I may safely say that all these varieties will do very well at Chicoutimi.

I took observations respecting the trees I lost, and I think it was due to the dampness of the soil. This year I pulled up some of the remaining roots and found a layer of rot all around like that found on the roots of trees planted in too damp soil. I came to the conclusion that, to grow successfully, apple and plum trees must be planted in soil well protected against the wind, and on which potatoes may be grown every year. In a portion of my orchard these vegetables grow well only in dry years, and the trees I lost were planted there, I must say that I was surprised at your splendid exhibition of vegetables, flowers and fruit. You give an example that should be followed everywhere. I have been present at several exhibitions of fruit, but never have seen any to compare with yours, and with what is done in the County of L'Islet. I am so delighted that when I get home I propose to try and found a society like yours. (Applause.)

I have brought with me what I may call the first exhibition of fruit of the County of Chicoutimi; it is contained in a box nine inches square. Here is a Yellow Calville; here some Champaux grapes, grown at Chicoutimi, which is as ripe as any I have seen at your exhibition; here are a Whitney apple, a Transcendant, a Cherry, a Yellow Siberian, a Hislop. I hope that before long the County of Chicoutimi will have a horticultural exhibition more considerable than this one. We take an interest in what is done here. I do not want to praise my part of the country, but I must tell you that we wish to cultivate fruit, and when we wish anything we generally do, or get it.

I thank you, ladies and gentlemen, and hope that in future you will cease to believe that Chicoutimi is a place where we freeze all the year round.

The President—I am very glad for two reasons that I invited Mr. Tremblay to come and tell us about his attempts at fruit-growing in his part of the country. I think he has done very well considering the short time his experiment has lasted. What he has told us to-night is not of absolute use to us, who are already well advanced, but, when published in our report, it will be very useful for the people of his section, who are already astonished at his success, in a place where there were nothing but failures before, and who have decided to follow



his example. The second reason is that, even if the only result of his visit were the good resolution he has taken to try and found a horticultural society in his county, it would pay his trip, and I know that if Mr. Tremblay wishes to found a horticultural society, at Chicoutimi, he will succeed, for whenever he has undertaken a difficult task he has nearly always succeeded.

I am happy to state, here, that whenever in any branch of farming we have to get an important new fact adopted, which we find some difficulty in getting the older parishes to adopt, we have only to propose it to the settlers of Lake St. John and Chicoutimi, and they at once take it up, and push it so vigorously, that those who have started the idea have hard work to keep up with them. Mr. Tremblay is one of those people, and the efforts he has himself made show that he is one of those who strive the hardest for the welfare of his section.

I had invited Mr. Brodie, one of the leading directors of our Society, to read a paper on packing and marketing of fruit, a very important matter at present, when the great advantages to be derived from fruit culture lead us to seek for new markets.

Unfortunately, that gentleman, who is a large orchard owner, is unable to leave his work, as this is the shipping season. He has, however, sent us his paper, which I will read to you. Although he is a Scotchman, he has had the delicacy, knowing that the majority of those who would be present here speak French, to translate his work into French. If you will allow me I will read you his work, which is very important from a commercial point of view.

### PACKING AND SALE OF FRUIT.

By R. BRODIE, St. Henri.

In times like the present, when fruit is so abundant that our markets are glutted, it would be wiser for the producer to send his choice fruit to market and to keep the rest for home consumption. It too frequently happens that inferior fruit is packed and covered with choice fruit. The old saying, that it takes a smart man to judge a barrel of apples from its outward appearance, is very true. On the other hand, many get only an inferior price for their fruit, because they are packed in a slovenly and careless manner. We often see apples packed in old sugar or flour barrels, with bad fitting covers, and placed with the feet instead of with a press. Raspberries, cherries and other small fruits are brought in second-hand buckets, in which pork, etc., has been carried, when baskets and boxes can be procured from several Canadian factories at very moderate prices.

The quantity of strawberries grown in the Province of Quebec increases rapidly every year. There are farmers 15 or 20 miles from Montreal, who have from 12 to 14 acres of strawberries, but the strawberry boxes seem to decrease in size as the cultivation of these berries extends; the opening seems very large, but the sides slope in more and more. If this continues we will soon have only little cups instead of boxes.

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is much too deep fo

Our society should take action, and our Government should pass laws to make a barrel of apples equal in dimensions to a flour barrel; a box of strawberries contain a quart, and a box of raspberries a pint (the raspberry being a softer fruit than the strawberry); that baskets hold 4, 8 and 12 quarts.

There was a time in Montreal, about 20 years ago, when buyers could get wicker baskets containing a bushel, but they have been getting smaller year by year, until at present it is hard to get baskets holding three pecks. The farmer who sells his produce in large baskets does not get more than he who sells in small baskets, only he can sell it quicker. This should not be the case, for it is unfair to the conscientious seller, as well as to the buyer. Some years ago I spoke of this to the Chairman of the Market Committee of Montreal, and he told me it was the Government that controlled weights and measures.

For summer apples a flat basket holding 12 quarts is very desirable. For shipments across the sea a box containing about 40 lbs. gives satisfaction. You put a sheet of silk paper between each row of apples and wood fibre on top of all before putting on the cover. The "Cochrane" box is a very good one but is too expensive to compete with barrels and other boxes on a low price market; it may be reserved for special customers who pay fancy prices for choice apples. For the ordinary run of good apples barrels are preferable, but so few people know how to pack properly that the apples reach their destination all bruised and black. I saw some time ago on the Montreal wharves two car-loads of apples which were being put on board a steamer, several of the barrels were badly packed; they were soft, badly put in and the juice was running from one of them. Our friends in the Province of Ontario have urged the appointment of a Fruit Inspector, and there is certainly need for one in the Port of Montreal. Badly packed apples should never be put on a steamer, and every exporter should be compelled to brand his name on the cover of each barrel. As regards packing, so much the worse for him who packs dishonestly, for on the English market a barrel of each kind is taken, opened, and its contents emptied into a basket as a sample and the lot is sold by auction.

In barreling apples we strongly recommend the use of a table for sorting. The barrels are put on boards close to the table, the boards preserve the ends of the barrels from being soiled and they can be shaken better than when on the soft ground. We use baskets, which can be introduced into the opening of the barrels when emptying them, and the barrels are shaken from time to time. When the barrel is filled to within half an inch from the top, the cover is pressed in with a lever-press.

Our best market for apples is the English market, but what we require is "cold storage" steamers to take over our fall varieties, which reach such perfection in the Province of Quebec. At present we can get good prices in England for apples picked when a little green, so that they may keep better while in transit. What will it be when we send our apples quite ripe and looking their best? It is a general custom around Montreal to pick field raspberries, gooseberries, cherries and black currants in buckets holding about 2 gallons; a bucket is much too deep for soft fruit, the shallower the vessels in which the fruit is



placed, the better condition will they be when they reach their destination. Flat baskets holding from 8 to 12 quarts are the best.

In most markets the color of fruit goes before its quality, but it is better, if possible, to plant varieties with a good color, of good quality and firm enough to stand a long journey.

Mr. Barnard—Mr. President, if you will permit me to make a remark, and to show how important this question of trade-marks is, I will state what I learnt to-day. You know that considerable difficulty was experienced in introducing butter and cheese making in the Lake St. John Region; you are also aware that Lake St. John and Chicoutimi are at present considered amongst the best producers of butter and cheese. I have learned that by means of their trade-mark they get orders by cable and sell their cheese one cent a pound dearer, because it bears the Chicoutimi trade-mark. Evidently the article is an excellent one, but the English merchant, instead of applying to Ontario for special cheese, applies direct to Chicoutimi, because he knows that this trade-mark covers an article of superior and even uniform quality. I think we should note that fact, and since we have in our Province of Quebec particular fruit, with a special value, the sooner we adopt a trade-mark for our best fruit, the sooner we put a special mark on our goods, the sooner will we find a good market and get good prices for them.

The President—In fact we have our Fameuse and Duchess apples, which are easy of transport. When we have the required means of transport and cold storage for the conveyance of our products, we will be able to send our fruit, which is so good, so fine and so renowned, to Europe and get good prices for it. We have so far been prevented from sending them, because we could only ship them in special boxes, which are too expensive. In our region, where our winter apples, like the Duchess, succeed so well, we have the greatest interest in finding a practical means of sending our products to European markets. We should, therefore, take Mr. Brodie's advice and make every effort to carry out the ideas expressed in the paper I have just read. And now, as the day has been a rather fatiguing one for all, although very interesting, I think I will meet the views of everyone by adjourning this meeting to to-morrow morning at 9 o'clock.

FRIDAY, 25th September, 9 a.m.

The President called upon Mr. Craig to give explanations respecting the various specimens of apples exhibited by him.

Mr. Craig—Mr. President, ladies and gentlemen, I am very sorry I cannot speak French, but we have here your worthy President, who will, I hope, be good enough to translate what I have to say. The first apple I have to show you is a Delaware Red. Here is one of this year, and here is one of last year, which has been kept under the usual conditions, in an ordinary cellar, in a box,

but not packed. I recommend this apple only to give me

Mr. Barnard

Mr. Craig—You are a Canada I do not so much so as the Province of Quebec branches, but I can

We now come through the winter very hardy with us often have twenty Christmas, we had the first quality. very good for ship

Here is another. It will not grow in well and is a very have just shown you not recommend the apple is the MacM as you see. But it good quality, and I two trees of it, but to export. It is a

This is the Nor but too soft. It is

This kind, called the last. The tree keeps till about the apple. We cannot y apple.

I now pass to t better than the Wh With us it ripens ab about the first Octob

This one keeps a good crab. I recor apples can be gather

I now come to p very hardy. - The Claudes. This is one



but not packed. The tree is very hardy and yields abundantly. I can recommend this apple as being of good quality. Those who wish to get grafts have only to give me their names and I will send them branches.

Mr. Barnard—Is it an apple that sells well?

Mr. Craig—Yes. Winter apples always sell well. The apple I now show you is a Canada Baldwin. This kind keep well. The trees are very hardy, but not so much so as the one I have just shown you. This kind is a native of the Province of Quebec, and a medium bearer. I will try and send you some branches, but I cannot promise.

We now come to the Swayzie Grey, a pretty little apple which keeps well through the winter. It keeps longer than the Canada Baldwin. The tree is very hardy with us at Ottawa, where the climate is colder than here, for we often have twenty degrees below zero, which is very rare here. Last winter, at Christmas, we had thirty-two degrees below zero and no snow. This kind is of the first quality. It is the kind of Russet I recommend for here. It is also very good for shipment.

Here is another apple which keeps well, the Pewaukee, a very hardy tree. It will not grow in this climate as large as the one I now show you, but it keeps well and is a very good cooking apple. I strongly recommend the varieties I have just shown you. There is another of which I will speak to you, but I cannot recommend them as well, as they are as yet too little known. This large apple is the MacMahon White. The tree is very hardy and the fruit very large, as you see. But it will never grow as large here. This apple is not of very good quality, and I cannot recommend it generally. It may do to have one or two trees of it, but it is not a good trade apple. It is rather hard and difficult to export. It is a fall or early winter apple.

This is the North Star. The tree is very hardy, the apple of good quality but too soft. It is a Duchess seedling. It is not good for trade.

This kind, called Gano, is also a new one. I think it is a better apple than the last. The tree is hardy, but I cannot say that it yields much. With us it keeps till about the middle of winter. I think it would sell well. It is a new apple. We cannot yet state its value, but, judging from appearances, it is a good apple.

I now pass to the crab-apples. The best kind is the Martha. It is still better than the Whitney. It is the best Siberian crab. It keeps for a month. With us it ripens about the first of September. Here it would ripen probably about the first October and would keep until November.

This one keeps for two months. It is called the Quaker Beauty. It is also a good crab. I recommend them both. They yield very well. A barrel of these apples can be gathered from a single tree.

I now come to plums. As a rule, I may say that these American plums are very hardy. The buds never kill; still they are not equal to your Reine-Claudes. This is one whose blossom does not freeze. It is called the Stoddard.

This tree yields very well and yields fruit while young, even when two or three years old. These plums are grafted on the native Red Plum tree.

A voice.—Can we get any from the nurserymen?

Mr. Craig.—No; but I can send you some branches for grafting.

Now I would like to say a word to you about a seedling which Mr. Shephard, your last President, found by accident in his orchard. It is of the Duchess type. He sent it to me at my request for I wished to show it to the members of the Society. This kind keeps longer than the Duchess and the Whitney. It is of good quality and the tree produces well. Mr. Shephard sent us this apple to show you what can be obtained from seedlings. It is evident that this is really a good apple. Mr. Shephard will be able to sell these trees very soon to anyone who wishes to deal in them. All the apples here originated like that. A man may sometimes make his fortune by producing a new variety. This should encourage people to make trials in that direction. Thus, we are seeking here for a first quality winter apple. Whoever succeeds in producing it will certainly make money. Do you want an example? I exhibited the other day a currant called Fay's Prolific. Well the person who produced that variety sold it for thirty five thousand dollars.

We have here an apple exhibited by Mr. Barnard; it is the Winter St. Lawrence. These trees are very hardy and yield well, and the apples keep all winter. At Ottawa they keep until January, but here they will keep until March. It is a good trade apple.

The President.—Now those who desire any information on the subject before us are welcome to ask for it. We are here for the purpose of giving them all the information they want.

A voice.—How long does it take to dry apples?

Mr. Craig.—That depends on the dryer; but as a rule it takes a day for each lot. In the largest dryers it takes only two hours; but in the small ones about a day. The small evaporators cost but little. In Montreal there is a factory, that of Mr. Greiner, on Wellington street, where small ones are made which are very suitable for farmers. They cost about thirty dollars. When you have seen one you can make them yourselves for about ten dollars.

Mr. Chapais.—Have you heard of one that can be put on a kitchen stove?

Mr. Craig.—We tried one of those some years ago, but it was not satisfactory because it does not dry evenly.

A voice.—Can a tree which has been frozen bring forth its leaves in the spring and then die in July?

Mr. Craig.—Sometimes when we have a very cold winter, without snow, frost penetrates the ground to a great depth and partly kills the root. However all the substance is in the buds and when spring comes there is enough of it to allow the leaves to grow for two or three weeks; after that the tree needs its roots and as they are frozen, the tree withers.

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Mr. Craig.—broken by the f frozen, only thos shows the impor

Mr. Barnard say that the orch These apples are these apples have except locally, b will give satisfac

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(Mr. Barnard of the new orchard

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Mr. Craig.—W down to the live w branches there is r cut about ten inch must be put on the

A member—Is

Mr. Craig.—I able to recommend



Mr. Tremblay.—But if the roots are not frozen at all, how then do you explain that phenomena?

Mr. Craig.—I presume it must be the sap vessels in the tree which are broken by the frost. It sometimes happens also that the roots are not quite frozen, only those about the collar and that is sufficient to cause its death. This shows the importance of spreading a litter at the foot of the trees in the fall.

Mr. Barnard.—Here is an apple I want to show, the Autonovka. I may say that the orchard from which it comes was planted only four years ago. These apples are very large; the tree is very hardy and yields well. Many of these apples have a bad shape. They would probably not be suitable for trade, except locally, but I think that where the climate is cold it is a variety which will give satisfaction to families.

Here is another apple of which children are very fond; the best proof is that nearly all mine have been stolen. This shows that the apple is a good one. The tree is remarkably productive. It is called Whitney No. 20. To my taste I like it better than the Fameuse, but that is a matter of taste.

(Mr. Barnard exhibited about fifteen varieties of very fine apples, the product of the new orchard).

Mr. W. Tremblay.—I would like to know whether a tree planted in a rather damp soil, a cold soil, is more likely to be killed by frost.

Mr. Craig.—No, I do not think so. A dry sandy soil is worse. A tree planted in a dry sandy soil will, when the fall is a wet one, be more frequently exposed to be frost-killed than if in a slightly damp soil. Of course, I do not mean a wet soil, whence water drops. Trees must never be planted in such soil.

Mr. Verrault—Is there any remedy for black knot besides cutting and burning?

Mr. Craig—By spraying with Bordeaux mixture pretty often during the season, say at least ten times, the knot would be prevented from forming; but whence once it exists there is no other way to get rid of it than by cutting and burning.

Mr. Chapais—I found black knots on the trunks of large cherry trees in my orchard, which I did not wish to cut. I removed them with a joiner's chisel, cutting down to the live wood; then I burned the wood with a hot iron and it never came back.

Mr. Craig—When you want to keep the tree you may save it by cutting down to the live wood and applying turpentine or paint. In the case of small branches there is nothing to be done but to cut and burn them. They must be cut about ten inches below the knot so that it will not grow again, and clay must be put on the wound.

A member—Is the Salome a variety to be recommended?

Mr. Craig—I have not yet had sufficient experience with that variety to be able to recommend it.



Mr. W. Tremblay—I would like to know whether, in a place like Chicoutimi, where there is a great deal of clay, apple trees can be kept in a clayey soil?

Mr. Craig—Certainly, provided the land be well drained so that no dampness remains in it.

Mr. Barnard—Is drainage needed or is it sufficient to dig deep ditches?

Mr. Craig—Sub-soil drainage, drains sunk to a depth of three feet, would suffice to keep apple-trees alive in clay. Another method suited to that kind of soil consists in planting Hyslops at first, then in grafting on the Hyslops. The Hyslops grow better in clay than any other I know. The grafting must be done on the stock.

Mr. Barnard—At what age do you graft?

Mr. Craig—Plant at two years, and two years after that graft.

A voice—Can you give us a remedy against the bark louse. It is more of a scale or scab than a louse.

Mr. Craig—Here is the remedy I recommend; it should be applied when the leaves are about three-fourths grown. Make a mixture of two gallons of coal oil, have a pound of home-made soap and a gallon of water. Shake these well together, first putting the soap in hot water to make soap-suds about the thickness of milk. This must be thoroughly shaken up which is easily done with a small pump for spraying trees. It gets like milk. Take this solution and mix it with nine times its volume of water, that is to say, for your three gallons of the preparation you must have twenty-seven gallons of soft water, river or rain water, not hard water. Then you spray your trees with it when the leaves are about three-fourths grown. You must do this twice at an interval of three or four days. This spraying must be well done and the liquid must penetrate everywhere. If a single spot on the bark is left untouched by the liquid you may be sure that the lice will soon return. It is very important to repeat this operation a couple of times after an interval of three or four days; it is better to do it three times. It cannot hurt the trees as the preparation is perfectly harmless.

A lady—How can we protect the trees against field mice?

Mr. Craig—There are two methods. The best and the one most generally followed is to put tarred paper around the trunk near the ground. It is tarred on both sides. You cut a square, just large enough to go around the tree; let it dry so that the tar will not be too sticky; put it around the tree and fasten it on with tacks, then the field mice will not touch it.

Mr. Chapais—There is another method which I find easier and cheaper. Sometimes in cutting your tarred paper, you cut it too large and there is a loss. To obviate this, I cut the tarred paper in strips three inches wide. These I roll around the tree to the required height and then fasten it with a tack. To avoid loss of time in drying the paper, get some tarred only on one side; put the

tarred side out; in spring it is better. Sometimes in the and these days are

Mr. Craig—? consists in making down the snow or field-mice caused

I do not recall cause noxious insects

A member—? trees?

Mr. Craig—A green louse sometimes the leaves, and the trees to eat this stuff must destroy the louse just now.

A member—V

Mr. Barnard— for all kinds of insects many apple trees. one was left, consequently insects, and the water containing poison, must be done before time, when an insect is green, and Mr. Craig that a small quantity provided lime be added hundred gallons of the lime and diluted with water. It is very Paris green may be used which does not dissolve Paris green in contact very little money. Buy it wholesale. Buy it which you can buy garden and on your bugs. I visited, our ground in which potatoes and the trees, and it boy drove the horse, ing. Our pump serves

tarred side out so that the side next to the tree will not stick to it. In the spring it is better to leave the paper for some time to prevent the trees scalding. Sometimes in the month of April we have very warm days when the sap runs, and these days are followed by heavy frosts.

Mr. Craig—The other remedy, which is not so good, as I failed with it, consists in making a small mound of earth at the foot of the tree and packing down the snow on it after each fall. I tried this but did not succeed, and the field-mice caused as much damage as before.

I do not recommend leaving the tarred paper on all summer, for it might cause noxious insects to collect between the paper and the bark.

A member—I would like to know how to keep ants from getting up the trees?

Mr. Craig—Ants go on the trees only when there are lice on them. The green lice sometimes found on trees secrete a sweet liquid which they drop on the leaves, and the ants, which are very fond of sugar, as you know, ascend the trees to eat this sweet substance. To prevent their doing so, therefore, you must destroy the lice, which can be done with the coal oil emulsion I mentioned just now.

A member—What is the remedy for wormy apples?

Mr. Barnard—There is no other remedy than spraying. This is the remedy for all kinds of insects. I know an orchard at L'Ange Gardien which contains many apple trees. All the leaves in this orchard were eaten, and in July not one was left, consequently there was no fruit. It is very important to destroy insects, and the way to do it is by spraying, that is by pumping water on them containing poison, generally Paris green, so as to cover all the leaves. This must be done before the leaves open and after the fruit is formed, and, a third time, when an invasion of insects is feared. The best insect destroyer is Paris green, and Mr. Craig has done immense service to the country by discovering that a small quantity of Paris green can be used instead of a large quantity, provided lime be added. A single pound of Paris green can be used with two hundred gallons of water if a pound of lime, in lumps, be added. You slake the lime and dilute the Paris green, then mix the two to the consistency of a batter. It is very important to make this preparation in advance so that the Paris green may be well mixed. As you are aware it is an impalpable powder which does not dissolve in water. If you manage to bring every particle of the Paris green in contact with the lime you obtain a wonderful result and spend very little money. You get Paris green for eighteen cents a pound if you buy it wholesale. Buy good Paris green, mix it with lime, and with a small pump which you can buy for a small sum you can destroy all the insects in your garden and on your fruit trees. By this means you can easily destroy potato bugs. I visited, out of curiosity, an orchard covering an acre and a-half of ground in which potatoes are grown. We sprayed the potatoes, the small fruit, and the trees, and it did not take two hours. We were three, with a horse; a boy drove the horse, and we were two men, one pumping and the other spraying. Our pump sent the water to a distance of forty feet with a rubber hose.

It was quickly done. I told you just now that you should buy good Paris green. There is a law which protects us in that respect. The merchant is obliged to guarantee that the Paris green is pure if he puts the word "pure" on the package. If the Paris green he sells you is not pure, you have an action of damages against him, and that action is the society's affair. If you buy Paris green jointly the members of the society can protect themselves by bringing an action against the person who has deceived them. Moreover by getting the Paris green through the secretary of a farmers' club, or of an agricultural society, you get it cheaper and you get a better article, for the secretary will buy it wholesale from a respectable house. I have bought some for seventeen cents. For two hundred gallons of water you require only one pound of lime and one pound of Paris green. The pump should send the water in a spray, and when drops begin to fall it is time to stop. By this means an economy can be effected in Paris green. For this a sufficiently strong pump is needed, with a special nozzle. I bought one in Quebec from a Mr. Shaw, hardware merchant, which cost me sixty cents; it lasted me all the year and will probably do for next year. The best nozzle, according to Mr. Craig, is the McGowan nozzle, which costs a dollar, and can be procured from florists and seedsmen.

The President—I would ask Mr. Craig to be good enough to read us his notes on the new varieties of strawberries and raspberries.

#### THE NEWER VARIETIES OF RASPBERRIES AND STRAWBERRIES.

By JOHN CRAIG, Horticulturist, Central Experimental Farm, Ottawa.

Each year adds to the already large list of these fruits quite a number of varieties. It is, however, somewhat astonishing to find how few secure a place among the older, better known commercial kinds. It is also somewhat surprising to find in fruit producing districts that the standard variety of one locality is nearly always the standard or chief variety of another district, though perhaps far removed from the first. As instances, there is now no variety of raspberry more widely grown than the Cuthbert, and, however much we may talk about Jumbos in the matter of size and Prince of Berries in the matter of quality, the Crescent still stands at the head as the most widely cultivated strawberry of the day. I am now speaking from the standpoint of the commercial grower, and from that of the amateur, or of the gardener catering to the demands of a special or peculiar market. These remarks would lead to the conclusion, which I believe to be correct in a large measure, that the variety which becomes most widely known and most generally cultivated may not be the one which comprises the largest number of good points, but is rather the variety which give a fair return under many diverse circumstances. On the other hand, varieties bearing fruit of a better quality, but with constitutional adaptability comparatively limited, are doomed to obscurity, being gradually crowded out of existence by their more popular—because more adaptable—competitors.

Nurserymen, in common with other business men, in their hurry to "turn an honest penny" frequently introduce and force upon the public, before

thoroughly tested, entirely worthless annual plants.

During the varieties of strawberries, others, in addition, and emphasize the new varieties, I proposed of leading with the Director raspberries grown report was prepared should be propagated experience with viz., that described of "Sarah."

*Raspberries*, reductions, which in the Province serious mistake in varieties, Marlborough latter winter produced.

*Hansell*—Though not a strong picking season considerably firm, I growers to include

*Heebner*—The from seed of the variety of fruit it resembles berry, large; in quality reliable variety for

*Kenyon*—Introduced Iowa, U.S. Plant medium quality; variety. To grow

Among the varieties *Gladstone*. These account of defective

*Black Caps*—C which appears at the

*Older*—Origin, hardiness, ability to bloom and excellent



thoroughly tested, varieties which afterwards prove to be of little value, if not entirely worthless. This is particularly true when applied to strawberries and annual plants.

During the past six years we have tested at Ottawa a large number of varieties of strawberries and raspberries offered for sale by nurserymen and others, in addition to a great many produced at the Central Farm. To illustrate and emphasize the amount of caution which should be exercised in introducing new varieties, I might cite a case in point. Five years ago a committee composed of leading fruit-growers of Ontario and Quebec examined, in company with the Director of the Experimental Farm, and myself, a collection of seedling raspberries growing at Ottawa. Many of them appeared most promising and a report was prepared describing a number, with the recommendation that they should be propagated. This has been done, but I regret to say that subsequent experience with them has warranted us in introducing thus far only one variety, viz., that described in the Experimental Farm Report for 1894, under the name of "Sarah."

*Raspberries, Red*—I shall name only a limited number of the newer introductions, which it would seem wise to recommend for trial at the present time in the Province of Quebec. I may say, however, that one will not make a serious mistake in planting by adhering to the two best known commercial varieties, Marlboro and Cuthbert. The former needs high cultivation, and the latter winter protection, in order to secure the best results.

*Hansell*—This was introduced by J. S. Lovett in 1882. The cane is hardy, though not a strong grower. It usually opens the raspberry season, and its picking season covers a period of four or five weeks. Berries, medium size, moderately firm, fair quality. I am of the opinion that it will pay commercial growers to include this variety in their plantations.

*Heebner*—This is said, by Mr. Hilborn, the introducer, to have been grown from seed of the Wild Muskoka raspberry. In habit of growth and character of fruit it resembles the European type. Cane, vigorous and fairly hardy; berry, large; in quality first-class, but not firm enough for distant shipment. A reliable variety for the amateur or those situated near a market.

*Kenyon*—Introduced as a chance seedling by O. A. Kenyon, of McGregor, Iowa, U.S. Plant, a strong grower, fairly hardy; berry, large, conical, firm, medium quality; about the same season as Cuthbert. An excellent shipping variety. To grow it successfully in Quebec it should have winter protection.

Among the varieties widely advertised might be mentioned *Superlative* and *Gladstone*. These belong to the European type of raspberry, and have failed on account of defective foliage.

*Black Caps*—Out of a large collection of these I would mention only one which appears at this time to be a distinct and valuable acquisition. This is:—

*Older*—Origin, Independence, Iowa, U.S. Among its good points are hardiness, ability to withstand drouth, productiveness, large size, absence of bloom and excellent quality. Older, Hilborn and Gregg are three good varieties.

*Purple Varieties*—A cross between the red sprouting raspberry and the black tip propagating raspberry, almost invariably produces a purple berry. A large number of these have been produced and tested at Ottawa. Shaffer is the standard variety of this class, and thus far has not been superseded, although a number of our hybrids appear to be equally valuable.

*Columbian*—Said to be a hybrid between Cuthbert and Gregg, is claimed to be larger, more productive and better flavored than Shaffer, but as grown at Ottawa the difference, if any, is inappreciable.

#### STRAWBERRIES.

The most productive variety on our grounds is the old and well-known Crescent. Growers should remember that in order to secure the best results it must be planted alongside a staminate variety in order to secure perfect pollination.

*Bisel*—Pistillate. Strong grower. Berry, large, sharply conical, dark red, moderately firm, medium quality, late, productive. Promising for market.

*Buster*—A vigorous plant. Berry of the largest size, light red, conical, firm, rather acid. Season this year began on July 22nd.

*Greenville*—Plant hardy and vigorous. Berry, large, bright red, attractive, but soft; ripens among the medium early varieties.

*Sherman*—A strong grower with rich, healthy foliage. Berries, large, round, glossy, very productive; good quality.

*Scarlet Ball*—Weakly staminate. The strongest and most vigorous plant on the grounds. Fruit stalk very long. Berry, large, roundish; good quality, moderately firm. Season, medium to late.

Other promising varieties are Tennessee Prolific, Robinson, Wm. Belt, Enormous, Splendid, Phillips Seedling and Marshall.

Mr. Craig—I was much surprised to see at the exhibition here fine specimens of Yellow Antwerp raspberries shown by Mr. Chapais. I would be still more astonished, and very agreeably so, to be able to see at Ottawa, and especially at Toronto, Yellow Antwerp raspberries first gathered at this season of the year as Mr. Chapais does.

The President—Now, Mr. Craig, of all the varieties of strawberries and raspberries mentioned by you, which would you more especially recommend for here?

Mr. Craig—I would recommend all of them for here.

The President—Would you select any from those you have recommended?

Mr. Craig—In raspberries I would especially recommend the Hansel, Heebner and Older amongst the black varieties.

The President—Do you think the black ones would be good for our region?

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Mr. Craig—I would advise trying them.

The President—In strawberries, do you think we could do better with some of those you have mentioned than with the Sharples?

Mr. Craig—Yes, I think so, because the Sharples has never been considered very productive.

The President—As regards the black raspberries recommended to us, we have to try them. The trials we have made have not been satisfactory so far. They throw out too much wood and the fruit does not ripen well; it dries. Mr. Craig thinks, however, that we would do well to try them. As regards strawberries, he thinks we could do better with some varieties he has named than with the large Sharples which we have had here for some years. Amongst others, he recommends the Buster which is very large and comes only at the end of July, which would be an advantage, because it would come on the market when there were none of other varieties.

Mr. Barnard—There is one thing to which I would like to call the attention of those who are present here. I said a word about it last night. It is the importance of belonging to the Pomological Society. We have here men from Ottawa who have made a special study of fruit, and who attend to nothing else all the year round. There is Mr. Craig, who does nothing else at the Experimental Farm. He studies fruit, their diseases and their defects, as well as their qualities. I therefore think that it is of the greatest importance for all who like fruit to become members of the Pomological Society. The members have the advantage of corresponding with our officers, and afterwards we have a report which is published. You see our stenographer; what he writes will constitute a volume, and a most interesting volume for you. People who wish to learn, will find in that book facts and information which have cost us experimenters considerable sums to acquire. Just think of all the expenditure of time and money needed to acquire experience. Well, in this volume, you have in condensed form the result of experience we have acquired. Our Pomological Society travels in summer and winter. In winter for the purpose of discussion amongst members, and in summer to show the results obtained. For the sum of one dollar the Society gives you, in the first place, a very useful volume, and an opportunity of conversing with the most competent men. This year it has distributed many varieties of new fruits which we recommend for the various districts. I hope you will form a small club, which I will not call a farmer's club, but a horticultural and pomological club, amongst those who take the greatest interest in the cultivation of fruit, and then you will become corresponding members of our Society, and we, from your discussions, will derive the benefit of the experience you have acquired, while you will obtain a great deal of information which will cost you only one dollar, but will be worth many dollars if you count your time and study for something. I have been trying to grow fruit for twenty-five years, and I know all the difficulties that have to be overcome with new varieties; but if you get the experience of ten or fifteen men, and meet five or six times a year, you will obtain wonderful results. I hope one of the results of our meeting here will be that we will have twelve new members in the Pomological Society, and that you will form a horticultural society in



addition to your local fruit-growing society; that the men who understand the matter best will form themselves into a club in the parish for their own improvement and that of the whole province.

## RASPBERRIES.

The President—In my orchard I have white and yellow Antwerps, Cuthberts and Marlboroughs, and I have never had to protect or cover up any of these varieties in any way, and, in spite of the hard winter and the uncovered ground last year, my raspberry bushes suffered no damage and grew very well this year. I conclude from this that, if we have varieties like those I have just mentioned, we do not require to pay much attention to that point. It would be more important to do what I did for some years while my orchard was young, to put up fences in the orchard about every thirty yards, to collect the snow, and thereby obtain all the protection required.

Mr. Barnard—I now wish to speak of an experience of fifty years. My mother, who was very fond of horticulture, always took care to bed her raspberry bushes in the fall, and we always had excellent crops. They were Antwerps, a variety but little known at that time. I have not always bedded my raspberry bushes, but for three years I have grown them in a soil where trees of every kind, apple, plum, cherry and pear trees, as well as raspberry and other bushes, grow with such extraordinary vigor that I do not know how to prevent them from making wood. As to raspberries, I have tried the two systems. I was told that I could succeed without bedding them. I tried it and did not succeed. All the bushes which were not bedded suffered more or less from frost. I would like to know whether Mr. Chapais has succeeded better in this.

Mr. Craig—What varieties have you?

Mr. Barnard—I have several varieties which I received from the Ottawa Experimental Farm, but I do not remember their names for the moment.

Mr. Craig—They may have been much more tender varieties.

Mr. Barnard—That is possible. Mr. Jack says that the canes must be well matured. I would like to ask Mr. Craig and Mr. Dunlop, who have much experience in these matters, whether it is very important that the canes for the following year be well matured? In my case, I find they grow so quickly that, if I do not remove all the spring canes, the bushes produce much less, because they are choked by the new canes. I only allow the canes of the middle of June to grow, and I thus have less difficulty in bedding them. If I allow the spring canes to grow, they do so to such an extent that some are an inch and a-half in diameter at the foot, and as much as eight feet long. It is impossible to bed these, and whenever I have left them alone they have been frozen.

Mr. Dunlop—The question is whether you have snow or not. If you have it is the best thing, but if there is no snow then all varieties need protection.

The President—This is Mr. Dunlop's opinion, and he is one of the best raspberry growers in the Province. Mr. Barnard has raspberries which grow so

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vigorously that if the first shoots are allowed to grow they choke the fruit cones. Mr. Barnard wants to know whether the canes he allows to grow only in the middle of June mature their wood sufficiently to winter well. He thinks not.

Mr. Craig—If you cannot bed your canes because they are too strong, I would advise you to remove some of the soil at the foot, to uproot them a little on one side, so as to be able to bend them over on the opposite side.

Mr. Barnard—At my place, when I have cut the young spring bushes a couple of times, the ground is again covered with roots and becomes like a forest, which would have to be cut five or six times during the season. Is there any practical way of avoiding this work, which is terrible?

Mr. Craig—Should the plants be cut or allowed to attain their full growth? At the Experimental Farm we have, for years, made experiments in this connection on two parallel lines of the same varieties and in the same soil. In one row the stalks were cut at a height of about eighteen inches, and in the other the branches were allowed to grow, and in every case the uncut branches gave most satisfaction and yielded most fruit. That is the general experience. In both cases the plants were bedded; this must be done wherever there is no winter protection.

Mr. Barnard—According to Mr. Dunlop and Mr. Craig only a few branches should be allowed to grow, and these should not be touched. From my experience there should be only two or three stalks every three or four feet.

Mr. Dunlop—The great trouble with most people is that they allow too many canes to grow, while they should cut them as if they were weeds.

The President—Before we separate I would be very much pleased if Mr. Craig would tell us what he thinks of the exhibition he saw yesterday, and in which he acted as judge. I am sure you would like to have his opinion, as he is about the best horticulturist in the Dominion. (Applause.)

Mr. Craig—Mr. President and gentlemen, I am sure I express both Mr. Dunlop's opinion and my own when I tell you that I was pleased to see your fine exhibition of fruit yesterday. I was not prepared for so fine a result, and was astonished to see such fine fruit, so well matured and with such coloring; so remarkable, both as regards size and coloring.

There is one thing you must learn, and that is the difference between varieties. Then I saw some plates on which there were two varieties mixed. For instance, there were Fameuse and Wealthys on the same plate, or Fameuses with Sauvageons. You must learn to distinguish the varieties. On the whole we are very well satisfied with your exhibition.

I do not advise you to grow too many of those Russian apples. You may grow the other varieties I recommended to you this morning. The Russian apples are very hardy, but the quality is not as good as that of the varieties I mentioned. When you buy a tree from a nurseryman it is very important to have the name marked. When you exhibit it is very necessary to know the

names of your products. In this connection I may tell you that if any of you has a fruit whose name he does not know, he has only to put it in a little box and to send it to Ottawa, addressed to the Horticulturist of the Experimental Farm, and we will examine it and send you the name, if possible. As to the grafts I spoke of this morning, you will give your name to the Secretary of your society, who will send them to Ottawa, and next spring I will send you as many grafts as I can to put on your trees. Moreover, whenever I can be of assistance to you in any other way in your work, I will be happy to help you. We will be pleased to get the communications of your society. Our farm is for that, and the more we can render service as regards horticulture and arboriculture, the better will we be pleased. I would like to see some other varieties of plums tried here, and I hope you will ask me for grafts. I am going to try at Ottawa to grow some of the fine plums you have here, like the Reine Claude. I do not expect to succeed, because our climate is too cold, but I will try, however. I hope to meet a good many of you this afternoon at Mr. Dupuis, for I know that we can learn a great deal there.

Mr. Barnard—Mr. Craig has told us that there are some fruit trees we have planted which he does not recommend. These trees are young and strong. Does he advise us to graft on these trees some of the varieties he mentioned this morning? To cut the branches and graft better varieties in the spring? By this means we would preserve these trees. As for me I have an orchard of Russian apples.

Mr. Craig—I advise you to graft other varieties on these trees with which you are not satisfied, but which are hardy. Thus, if you have Russian trees, I would advise you to graft better varieties on them, and to crown-graft them. You can do the same with the Wildlings (Sauvageons). I have a small pamphlet containing instructions on crown grafting. I will be happy to send copies to all who may ask me for them.

Mr. Barnard—When you have a tree which is, say, about twelve feet high, with a great many branches, is it better to graft only a few branches every year?

Mr. Craig—In the case of old trees it is better to graft the whole in two years. Graft a portion the first year, and the remainder the following year. It is still better to do this in three operations.

One of the audience—Can crabs be grafted on a sweet apple tree?

Mr. Craig—It makes no difference, but sometimes if you graft a winter apple on a summer apple tree, the winter apple will not keep so long. On the contrary, if you graft a summer apple on a winter apple tree, the summer apple will keep longer.

One of the audience—Can you graft crabs on Calvilles?

Mr. Craig—Certainly. If you graft a winter apple on a summer apple tree, the winter apple generally becomes a fall apple. If you graft a summer apple on a winter apple tree it comes about a fortnight later at least. This is a fact worth considering. If, on your Wildlings (Sauvageons), you graft better

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winter apples, you will have a fruit of better quality which will keep as well. On the same apple tree you may have ten or twelve different varieties, by putting on as many grafts.

The meeting then adjourned for lunch, after which a visit was paid to the nurseries of Mr. A. Dupuis, Village des Aulnaies.

The following papers were contributed for the meeting and ordered to be published in report:

### ORCHARDS NORTH OF QUEBEC.

By ED. A. BARNARD, L'Ange Gardien.

The Pomological Society of the Province of Quebec has requested me to say a few words at this meeting which is of much importance to us fruit-growers to the northeast of Quebec. I accepted, in order to consult you about some of the difficulties I find in cultivating my orchard. As these same difficulties must frequently be met with in our climate, I hope we will have a moment to discuss them together in the general interest.

*Shelters*—The orchard in question is situated on the Côte de Beaupré, half way between Quebec and Ste. Anne, about 250 feet above the river on a plateau in the middle of a hill. It is sheltered on three sides; to the northwest, by the slope of the hill, which is from 400 to 500 feet high; to the northeast, by a slight rise and a thick hawthorn hedge from 10 to 12 feet high. It is also protected from the prevailing winds by a row of high trees on the southwest, a slight distance from the orchard. Whatever objections there may be against wind shelters, I am convinced that to the northeast of Quebec orchards should be sheltered to a moderate extent against the gales which are so frequent here at all seasons, but on the essential condition that the snow must be packed down around the trees as soon as it reaches the branches.

*Soil and Sub-Soil*—They are rich, consisting of 90 per cent. of clay and sand mixed, the remaining 10 per cent. being limestone. The schistous rock on which the sub-soil rests, a few feet from the surface, has a gentle slope affording perfect natural drainage for the orchard. I have been on this farm since 1892. Being anxious to start an orchard, and to see its fruits before I died, if possible, I at once ploughed the soil deeply and manured it abundantly. The land was considered to be exhausted, but the exhaustion was only superficial, as my trees and bushes have since grown in an extraordinary manner.

*Destruction of Weeds*—Being in a hurry, as already stated, and the ground having grown potatoes almost from year to year, I at once planted my trees and bushes in full and close rows, resolving to keep the orchard well weeded by means of a horse-hoe between the rows and a spade-fork at the foot of the plants, I frankly admit, that weeds of all kinds seem to be still in possession of the ground, in spite of our efforts and of our four weedings and ploughings per

season. This confirms me in the opinion that it takes seven years of careful weeding to destroy the seeds left in the soil of our fields more or less unused to cleaning crops. I, therefore, recommend that grounds intended for gardens or orchards be thoroughly cleaned beforehand, to avoid their being over-run by weeds of all kinds.

*Rank Growth*—This soil, exhausted at the surface by successive crops of the same kind, must have been very rich naturally, for my trees and bushes grow in a wonderful manner. The apple, pear, plum and cherry trees, which were an inch in diameter when planted, four years ago, now average from 4 to 5 inches in diameter and from 15 to 16 feet in height. The raspberry and blackberry bushes overrun everything and give more wood than fruit; the same applies to the currant bushes, etc. In spite of the gales, deep snows and the frequent passing of horses for ploughing and other works, which break off many branches, they still have to be pruned in the spring to an extent which grieves me, so unnatural does it seem. Mr. J. C. Chapais, the President of our Society, can tell you something of this rank growth which he has seen every year since the trees were planted. I am wondering whether I will not be compelled before long to bleed deeply the roots of my plum and cherry trees to reduce the super-abundance of sap and get a crop of fruit at last. Nevertheless, Mr. Craig and our Montreal members tell me that it is not necessary.

*Pinching*.—Last spring the *Journal d'Agriculture* reproduced an article by a distinguished French author, A'bé E. Ouvray, treating on a system of pinching, approved by the best French authorities. I tried it and I think I can recommend it. Last spring I commenced pruning my trees on this system, leaving only about two buds on last year's wood. Nearly all my apple trees yielded fruit in proportion to their strength. I rely greatly on next year's crop, although this year's stalks are much too long. I recommenced the pinching on this system during last summer, which seems still better. On that principle the whole strength of the sap goes first to nourish the fruit buds, while allowing a sufficient growth of new wood.

As regards the pinching of the plum and cherry trees, which I did on the same system, all that I can say is that the trees threw out a great many new shoots, but gave little or no fruit. The cherry trees, however, developed their fruit buds and had plenty of blossoms, but there were very few cherries. The plum trees bore little, if any, fruit. This is probably explained by the fact that plum trees are slower in bearing fruit, and mine were planted only four years ago.

*Raspberry and Blackberry Bushes*.—These require quite a special pruning with us. It seems to me that we should allow only enough new shoots of the year to grow to replace the fruit ones, and destroy the others as they come. Otherwise the ground becomes covered with a perfect forest of new shoots, and those bearing fruit lose strength and fruit in proportion. As regards pinching in the fall, I am inclined to believe that it should not be done, and that we should merely remove the unnecessary shoots of the year, cutting away chiefly those that are strongest, for I find that it is often very difficult to lay down and bed these large stalks in the earth without breaking them. This happened with me whenever I wished to keep the finest and strongest shoots. As to leaving

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them uncovered all winter, I found it a sure way to have but little fruit, at least in my grounds and with the varieties I have. Mr. Craig advises me to raise, with a stroke of the spade, the roots of the very strong plants I wish to bed. This is, in fact, an excellent way.

*Pinching Tomatoes.*—I have tried pinching tomatoes as recommended by the *Journal d'Agriculture*. This method consists in leaving only one vine branch for about 40 inches, leaving no side branches to grow. Mr. Jenner Fust, the editor of the *Journal*, obtains, by this method, tomatoes in July, but in a garden admirably situated in the city of Montreal itself, at the foot of the mountain, exposed to the sun and protected from every wind. I can devote but little time to pinching tomatoes, and the climate is much colder, so the only result in my case between pinchings consisted of extraordinarily long branches. The *Journal d'Agriculture* gave, this summer, the system of pinching recommended in France, and followed with great success by the Reverend Trappist Fathers at Oka. It consists in pinching the young tomatoes at about 10 inches, and afterwards allowing it to grow four branches, which are stopped when about 36 inches long. They are then tied to a strong post, so that each branch describes a curve, giving the tomatoes more air and sun. The crop which I saw last August certainly averaged a quarter of a bushel to each plant. These were placed about  $3\frac{1}{2}$  feet from each other, arranged in a quincunx. I am satisfied that, with this system, more fruit and less wood is obtained. I am also told that the tomatoes ripen as quickly as by any other system, especially for those who cannot pinch their tomatoes every two or three days.

*Last Pinchings.*—I observed at La Canardiere, near Quebec, only a few feet above the level of the high tides, that about the first of September all the leaves are removed, and only the full-grown, or almost full-grown, tomatoes are left on the stalks. I think that when the tomatoes are formed only enough leaves should be left to shelter them partially from the heat of the sun. A single tuft to every bunch of fruit is sufficient in my opinion. All the others should be removed as soon as possible. When the first frosts come, even the tomatoes not full grown must be taken off before the frost touches them. Of course, with us, north-east of Quebec, a considerable portion of our crop will have to be ripened in the house. I have myself observed that by removing all the leaves after very cold nights, the tomatoes ripened much sooner than if their leaves had been left on.

Now, gentlemen, I beg you again to take my remarks for what they are worth, remembering that I have but little experience in these matters, and that I have only treated them here in the hope of thereby obtaining the opinion of more competent men.



## A GLANCE AT THE ORCHARDS OF THE PROVINCE OF QUEBEC.

By DR. W. GRIGNON St. Adele.

MR. PRESIDENT AND GENTLEMEN :—

The Secretary-Treasurer of the Pomological Society asked me to read a paper before the members of that society, and as he left me to choose my subject, I have merely written down some remarks on the orchards of our Province. I am sorry I did not take note of all I saw, and of all that I heard in connection with fruit trees during my many wanderings through the Province.

I intend, in future, to carefully collect my notes taken in the various parishes, where I will give my agricultural lectures, in order to communicate them to you afterwards, both to be of use to you and to those who may communicate remarks to me.

Four years will soon have elapsed from the time when I began to travel through the Province of Quebec. And this year when revisiting some parishes where I went four years ago, I observed considerable improvement in the cultivation of orchards. There are at present but few parishes in which there are not young orchards. Apple trees are planted more symmetrically and at greater distances than formerly; greater care is taken of the trees; they are washed and brushed, hoed crops are grown in the young orchards; ashes are spread at the foot of the trees; the turf is removed and the trees are better pruned. In a word, I find great progress in every direction. People are beginning to understand that a well cared for orchard can bring in a good revenue to its owner. I allude to parishes where, four or five years ago, there was not a single apple tree. The use of Bordeaux mixture for fruit trees is becoming more general. At St. Hilaire I found over thirty farmers who had used this preparation with great success.

Here are the names of those who have thoroughly succeeded in the application of that mixture :

Messrs. Hennériégilde Leduc, Toussaint Galipeau, Joseph Déry, Joseph Marsan, A. Brouillet, Joseph and Henri Noiseux, Pierie Denis, the Sisters of Mercy, Ludorvic Préfontaine, Joseph Prevost, Misaël Larivée, Mrs. Widow Brodeur, Messrs. Olivier Leduc, Donalda Coté fils, Ludger Coté, Miss Alida Noiseux. Mr. Olivier L'Orsette was the first to use Bordeaux mixture on fruit trees at St. Hilaire. Mr. Joseph Hunault sprays his vines and cures them of mildew. Mr. Misaël Larivée sprayed a row of trees twice. He observed a marked difference in the appearance of the leaves and fruit.

Mr. Pierie Denis sprayed his apple trees, which remained in good order, as well as their fruit; while at his neighbor's the leaves had a poor appearance and the fruit was all spotted. This neighbor had not sprayed his trees.

They are so fully convinced here of the advantages to be derived from the application of Bordeaux mixture to fruit trees that the farmers assured me that

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next year not a farmer owning an orchard will think of neglecting this valuable preparation, which is now considered as necessary for fruit trees as Paris green is for destroying potato bugs.

A spraying pump has been brought from France, and has served as a pattern for Mr. Chanteloup, of Montreal, who makes them for \$10.00. At Mr. Blanchard's I saw the Lewis pump, which costs only \$6.00, and gives full satisfaction.

The borer worm is the bane of apple growers. Wherever I gave lectures I was asked how it could be destroyed. Generally a small wire is introduced in the hole made by the worm, and it is pierced when found. Sometimes the hole is crooked and it is then difficult to reach. I think that a strong solution of Paris green injected by means of a squirt, introduced into the opening of the hole, would reach and destroy it, for this insecticide can more easily penetrate the worm's retreat than a wire. It is the greatest enemy of the apple tree, especially on high and dry soils. A person who would discover an easy and infallible means of destroying this enemy would confer a great boon on his fellow-countrymen by publishing it in the *Journal of Agriculture*.

Mr. Louis L'Esperance has splendid crab apples, which keep well until May or June. Two barrels brought him \$11. The Sisters of Mercy also have splendid crabs (*Sauvageons*.)

*Prizes for Crab Apples (Sauvageons)*—A competition will take place in January next, at St. Jean d'Iberville, to encourage the growth of the best crab apples in the province. Four prizes of \$3.00, \$2.00 and \$1 will be given, besides a provincial prize of \$10.00.

A gold medal will be awarded for the most successful variety in five yearly competitions. These apples must, as regards both tree and fruit, possess the qualities required for a good, saleable, winter apple. For further details apply to Mr. W. W. Dunlop, Outremont, P.Q.

I sent that gentleman two crab apples given me by Mr. Pierre Denis. Mr. Dunlop wrote me that he found them very good and valuable. He keeps them carefully to better appreciate their qualities.

*Cultivation of Orchards.*—Mr. Pierre Denis has an orchard of 2,000 trees. For some years they appeared sick, exhausted. The leaves were yellow, small and withered. Last year Mr. Denis sowed his whole orchard in buckwheat, and, this year, in oats and clover seed. He says that the appearance of his orchard is completely changed, and that everything has gone better since last year. The leaves are wider and of a fine dark green. His trees seem to have taken a new lease of life.

The soil must be broken up every four years and buckwheat sown in it. Too many large branches must never be cut off, for you will regret it, as the Sisters of Mercy did; so their farmer told me.

According to Messrs. Pierre Denis and Joseph Blanchard, the distance between the trees should never be less than forty feet.

Mr. L. Hamel says that orchards facing the north are the best, and that the foot of the apple trees must be cared for before their head.

Mr. Ludger Guertin got six barrels of apples (Elzear) from a tree ten years old.

Mr. Cyprien Gaboury, who used Bordeaux mixture this year on his apple trees, says that his worst apples are finer than the best he got last year.

*How Should Coal Ashes be Used.*—Rev. Mr. Veronneau put a layer of three inches of coal ashes on the foot of his currant bushes and vines, and the effect was simply wonderful. The fruit was delicious, the bushes stronger and the insects completely disappeared. He was advised to do this by a colleague; therefore it would be advisable to make a more general use of the ashes from our cities.

*Pear Trees.*—The reverend gentlemen got out from France five varieties of pear trees, which all succeeded well, amongst others the "Beurre d'Anjou" and the "Jules Chrétien," which produced very fine fruit, all fully maturing. They were larger than one's fist. These pear trees cost only 45 cents each. Mr. S. Boucher, of St. Hilaire, got three bushels of very fine pears, perfectly ripe, from a single pear tree. The County of Rouville is really a land of plenty.

*Orchards in Heavy Soils.*—Mr. Meunier, of St. Césaire, has apple trees twenty years old, growing in heavy soil, which are very fine. It would certainly be difficult to make him believe that it is impossible to cultivate apple trees in that kind of soil. In fact they should be grown everywhere, and every farmer should make it a duty to have some. Heavy soil should be well drained; in the trench in which the tree is planted a couple of loads of light sandy or gravelly soil should be put and success will be assured.

What a source of revenue would not this be for the Province?

#### MR. JOSEPH BLANCHARD'S ORCHARD.

*Bordeaux Mixture Again, How to Prepare and Apply It.*—On the 8th October, at 6.30 a.m., I crept stealthily into the fine orchard belonging to Mr. Joseph Blanchard, whom I surprised, behind piles of fine Fameuse apples on one side and baskets on the other. He was occupied in packing his apples in baskets, which he sells for 30 cents each; four baskets go to the bushel, for which he consequently gets \$1.20. From this must be deducted the price of the baskets, which cost 45 cents a dozen; the pink gauze covering the baskets and the freight, which is very high, and of which Mr. Blanchard has reason to complain, as he has to pay 29½ cents per 100 lbs. for a distance of about 30 miles. Deducting all these expenses, his apples bring him \$1 a bushel. This is still very good. His orchard is only 11 years old, and contains 196 apple trees. "Last year," he said, "he was discouraged at the sight of his apples, which were very few in the first place, then spotted, wrinkled, looking more like little scaly toads than apples. This year, I decided, therefore, to use Bordeaux mixture to a considerable extent. And now come and see my apple trees." I was

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is a breeding place  
trees, together wit

*Varieties.*—Bes  
which are very fin  
the market.



positively astonished at the sight of the fine Fameuse and other apples, all perfectly sound, bending the branches to the ground with their weight. However, I was a little frightened on seeing dried Paris green still on the leaves and apples. Mr. Blanchard observed my surprise and began to laugh. He picked an apple, wiped and ate it, saying: "It is not more dangerous than that." I followed his example, picked and ate two apples and am none the worse for it. "Now," said Mr. Blanchard, "to show you that it is absolutely necessary to freely spray the trees and fruit, as if you bathed them in the river, look underneath that branch which I have not sprayed." The upper portion of the apples which had been reached by the mixture was sound, while the underneath part was spotted because it had not been wetted. "Now," I said, "I would like to see an orchard not very far from here not sprayed or insufficiently sprayed, to compare the apples with yours." "That is easy," said Mr. Blanchard, "jump over the fence." We did so, and we were in the *curé's* orchard. Ah! *M. le curé*, it must be admitted your Fameuse apples are far from being as fine as Mr. Blanchard's, although you sprayed them once. In fact they look like little scaly toads hanging on your trees. It is true that this is amply compensated for by your fine summer Calvilles, which yield abundantly every year and keep well into January, and by a fine crop of fine pears. I must congratulate you on your Calvilles and your pears. Mr. Blanchard gives five sprayings.

The first should be before the bud opens, as soon as the sap begins to run, when the bark begins to get green. Why? To destroy the grey, ash-colored fungus, the bark-louse, which bites the bark, and other insects. The tree should be thoroughly drenched with the following preparation: No. 1, lime, 4 lbs.; blue vitriol, 4 lbs.; water, 40 gallons.

The second spraying should be before the blossoms open, with the following preparation: No. 2, lime, 4 lbs.; blue vitriol, 4 lbs.; Paris green, 4 ounces; water, 40 gallons.

The third spraying should be done in the week following the fall of the blossoms with preparation No. 2.

The fourth spraying should be done a fortnight after the third with preparation No. 2.

The fifth about the 12th July with preparation No. 2.

I asked him whether it paid him, after all, to take all that trouble. He replied that last year he got only 15 cents a bushel for his apples, while this year he got \$1.00, and had three times as many.

*Care of the Orchard.*—What struck me chiefly was the cleanliness of the orchard; the soil at the foot of each tree had been broken up and levelled; all the trunks had been scraped and showed a smooth surface; no old bark, which is a breeding place for insects. He also puts ashes and lime on the foot of the trees, together with manure.

*Varieties.*—Besides his Fameuse, I also admired his Winter St. Lawrence, which are very fine, and seem likely to dispute the prize with the Fameuses on the market.

The Ben Davis are very hardy and keep until June.

Three Yellow Transparent, planted six years ago, brought him \$8.00 this year. The Wealthy are exceedingly fine and very productive, but they have the defect of falling off too soon.

Eleven Duchess apple trees brought him \$37.25.

The Winter Strawberry are enormous and delicious. I myself weighed some, which were 14 ounces in weight, and measured 13 inches in circumference. The fruit looks really beautiful in a tree. They sell for 5 cents apiece. He converts the inferior qualities into dried apples. In fact, I remarked in the kitchen some boards near the stove on which sliced apples were drying. It takes a bushel to make 6 lbs. of dried apples, which sell for 6 cents a pound. These dried apples are pressed into small square boxes with glass covers.

Mr. Blanchard prunes his trees in the spring, and covers the wound with a coat of shellac, which he prefers to grafting wax.

In his opinion the borer worm works down into the root the first year, cuts the main roots, gets back into the tree in the second year. This is the reason why the roots have frequently to be dug up to get at this fatal enemy.

Mr. Blanchard uses the Lewis pump (price \$6.00) for spraying his trees, and is satisfied with it.

Besides the apples, which yield him a fine revenue, Mr. Blanchard also keeps bees and deals in honey on a large scale.

I left that worthy and intelligent farmer quite delighted and convinced that, although not the hardest working farmer, Mr. Blanchard is not one who gets the smallest crops, and that poverty will never darken his door.

Now, gentlemen, I have met with orchard owners who are quite discouraged, amongst others a Mr. Desjardins, of St. Vincent de Paul whose orchard used to bring him in from one thousand to twelve hundred dollars, and which this year did not bring in ten dollars. Why? Because his apple trees were ravaged by caterpillars. I asked him why he had not destroyed the eggs. His answer was: "Even if I destroyed all the caterpillars in my orchard, I could never prevent my neighbor's caterpillars from getting on my trees." In fact, when I looked at the neighbor's orchards I saw they were infested with that wretched enemy. Thereupon that sorely-tried farmer begged me to ask the Pomological Society to use its influence with the Quebec Legislature, or the Federal Government, to obtain the enactment of a severe law punishing by fine, and even imprisonment, every person neglecting or refusing to destroy caterpillars' eggs, to remove spots or blight, or to guard against the contagious diseases of fruit trees. If a law exists punishing with a fine all who allow weeds to grow along his road, I do not see why we should leave unpunished those who, through their negligence, cause damage to their neighbors by allowing hurtful insects or contagious diseases to propagate on their trees.

Mr. James Fletcher, the botanist of the Experimental Farm, wrote me recently that the greater portion of the orchards in Ontario had been devastated

by the pear blight in Quebec. It is as simple as you can see. The quality of the dried apples is such that the tree dies, and it is, therefore, a point out at which the hope that will pardon any fruit-growing, you are right to give me

I have to speak of the cultivation of an orchard in horticulture; I will point out the point of view and the influence of my audience in the case I will mention. The orchards extend up my subject.

I. *Preparation of the ground* so as to prepare the ground so as to prepare the ground is well done. The hoeed crops in the orchard are one acre. Then I lay out seventy to the acre to cultivate an orchard of thirty-six feet and of apples every opening. I mix the soil well into the inches of soil over the surface exposed to the wind in summer and manure the ground to grow at the foot of the manure which the result has been apples. The proper pound; the whole

II. *Pruning* the pyramidal form a closer to the tree, f



by the pear blight. This disease has commenced its ravages in the Province of Quebec. It is time to act, and to act energetically. The treatment is very simple as you are all aware. Unfortunately farmers know but little of the quality of the disease; they allow matters to go on, the disease runs its course, the tree dies, and a loss of several thousand dollars is incurred in a few years. It is, therefore, urgent to warn farmers by means of the press and of circulars, and point out at once the treatment to be followed. I will conclude, gentlemen, with the hope that these remarks will be well received by you, and that you will pardon any errors which may have crept into my paper, for, as regards fruit-growing, you are more experienced than I am, and I fully admit your right to give me advice, which I will always be happy to follow.

## THE CULTIVATION OF ORCHARDS.

JOSEPH BLANCHARD, Abbotsford.

I have to speak of a subject which is of vital importance for the proper cultivation of an orchard. I certainly do not know all there is to be known about horticulture; I will, however, endeavor to deal with my subject from a practical point of view and with as much precision as possible. I rely on the kind indulgence of my auditors, for I come here rather to learn than to teach. This being the case I will endeavor to be as brief as I can. My experience in cultivating orchards extends over the past thirty years. With this introduction I will take up my subject.

I. *Preparation of the Soil for an Orchard*—I commence by draining the ground so as to prevent water remaining in and still less on the soil. When the ground is well drained I give it preliminary cultivation for two or three years; hoed crops in the last year with a good layer of manure, a hundred loads to the acre. Then I lay out the rows of apple trees on the quincunx plan, planting seventy to the acre. I advise all who have sufficient ground at their disposal to cultivate an orchard to plant fifty apple trees to the acre, that is, with spaces of thirty-six feet between the rows. By this I am sure of a good crop of hay and of apples every year. I dig holes a foot and a-half deep with a two foot opening. I mix good mould with well decomposed barn-yard manure; this I mix well into the ground and then I plant my trees so as to have a depth of six inches of soil over the highest root. I then press the earth hard down; in places exposed to the wind I put up a good prop which protects the young tree against the wind in summer and against the snow in winter. I continue to cultivate and manure the ground at the foot of the trees every year. I allow no shoots to grow at the foot of the trees, but pull them up as soon as they appear. To the manure which I use at the foot of the trees I have added ashes and lime and the result has been very satisfactory, especially as regards the color of the apples. The proportion of ashes was four pounds per tree, and of lime, one pound; the whole well spread over the roots.

II. *Pruning Apple Trees*—I prune the trees so as to give them a pyramidal form as much as possible. By this means I can cultivate much closer to the tree, for I have no branch lower than three or four feet from the



ground. I prune, in the spring, in the month of May; then during the summer I pinch off the buds. I never prune in winter. When I have to cut off a large branch I cut it as close to the tree as possible, and this causes the wound to close up in a couple of years. I cover it with a coat of shellac. I have also used grafting wax, which is very good for keeping out the air. In the months of August and September, of each year, I carefully inspect the foot of my apple trees, to prevent the ravages of the borers, which are very hurtful to young trees. In the first year the borer gets strength, and in the second year makes its way by penetrating into the roots, and, when the tree is small, goes around it, cutting all the roots. I have sometimes found in the morning a tree, planted two or three years before, fallen down and holding by only one root. An orchard owner should never neglect to fight this destructive worm.

III. *Caterpillars, a Destroying Enemy.*—To prevent my apple trees being invaded by the caterpillars, which make their appearance in the spring, I carefully examine each tree and remove all the rings I can find. These are deposited on the new wood of the year, and are very easily discerned. There is also the Turkish caterpillar, which comes in the month of July; it is very large and keeps on the leaves in serried ranks close together. There is likewise the tent caterpillar, which comes in August; it is easily found and destroyed; it attacks only the underside of the leaf. A good orchard grower should never allow any of these destructive enemies of the apple tree to remain; he should wage ceaseless war against them.

IV. *Spraying for the Trees.*—An orchard owner who wishes to have a good crop of fruit must spray his trees if he wishes to be successful. I have tried spraying for some years, and have observed a very great difference in the yield and quality of the fruit, and also in the quantity of fine apples. I spray in the spring with sulphate of copper before the buds open, using one pound to fifteen gallons of water. After the buds have opened, but before the blossoms open, I spray with Bordeaux mixture, viz., one pound of sulphate of copper, or blue vitriol, and a pound of quick lime in fifteen gallons of water; to this I add one ounce of Paris green. By this means I destroy all the small caterpillars which attack the tender buds, and I preserve the flower buds against the caterpillars, which attack them particularly, and thereby obtain more abundant crops. Then I spray the second time immediately after the fall of the blossoms; and the third time a fortnight after the second, and so on until the fifth spraying. By this means I preserve my apple trees against the caterpillars in the first place, and afterwards the apples against worms and spots. Thus my apple trees have very fine leaves and very smooth and clean bark; in a word, my trees are in the very best condition of health; not a spot even on the leaves. I, therefore, conclude that spraying is the most effective weapon against the enemies of fruit, plum, cherry and pear trees, and of grapes, currants and gooseberries, although they have to be applied in a slightly different manner.

V. *The Apple Crop.*—Apples, like all other fruit, must be gathered with the greatest care. When the apples are ripe they must be very cautiously picked by hand, so as not to break the bud. To do this the apple must be turned to one side, and not be pulled, so as to avoid breaking the fruit bud for next year.

I myself have shaking the tree no fruit. Exp we get a good failure in the very difficult to have succeeded manuring and kitchen. Now, they must be p to the fruitery i Last year I pick and placed them tion, and we at flavor. From t the Yellow Tran tion, might be k price for our fal

I resume :— with the greatest far apart as poss mend that they

II. The soil shoots must be a ated when it bec

III. The tree being left bearing branch has to be the wound must with a coat of g Grafting wax is n parts of tallow.

When an apple be cut off eight or

IV. *Spraying* a good crop and k yield from a sick expect a good day any other fruit tr depends on this.

V. Every orch must not be shake The fruit must nev ported in vehicles r

I myself have seen persons break all the fruit buds off their apple trees by shaking the trees while gathering apples, and the following year these trees bore no fruit. Experience has proved to me that when apples are gathered carefully we get a good crop every year from the same trees. I may say here the only failure in the crop was in the case of Tetofsky, a very early summer apple, very difficult to cultivate so as to have a crop every year from the same tree. I have succeeded in getting a couple of these trees to produce every year by manuring and watering them every second day with dish-water from the kitchen. Now, as I have already said, great care is needed in gathering apples; they must be picked by hand, and placed in the basket by hand, and be carried to the fruitery in an easy-going vehicle, to prevent them being bruised or broken. Last year I picked fall apples with the greatest care, carried them to my fruitery, and placed them in it by hand. I kept some of these apples for home consumption, and we ate some on the 14th August last which had retained all their flavor. From this I conclude that all apples not liable to fermentation, such as the Yellow Transparent, Astrachan and Duchess, if picked with proper precaution, might be kept for a great part of the winter, and we could thus get a better price for our fall apples.

I resume:—I. The preparation of the ground for an orchard must be done with the greatest care; manure must be applied, the trees must be planted as far apart as possible, so as to allow the air to circulate freely. I would recommend that they be not planted within thirty-six feet on all sides.

II. The soil about the foot of the trees must be cultivated with care; no shoots must be allowed to grow at the foot; the bark at the foot must be separated when it becomes rough, for it gives shelter to thousands of insects.

III. The trees must be carefully and methodically pruned, no branches being left bearing from the trees; the buds must be pinched off; when a large branch has to be cut off it must be cut carefully, as close to the tree as possible; the wound must be polished with a very sharp instrument and then covered with a coat of grafting wax or shellac, a kind of rosin diluted with alcohol. Grafting wax is made with three parts of rosin, three parts of beeswax and two parts of tallow.

When an apple or pear tree is attacked by blight, the branch affected must be cut off eight or ten inches below the afflicted part and burned in the stove.

IV. *Spraying*—Do not fail or neglect to spray the trees if you want to get a good crop and keep your trees in perfect health, for we cannot expect a good yield from a sick tree, or a tree covered with useless branches; you cannot expect a good day's work from a sick man, and it is the same with the apple or any other fruit tree. We must not forget to spray our orchards, for success depends on this.

V. Every orchard owner must see that his fruit is properly picked. Trees must not be shaken to get their fruit, which is to be taken to the fruitery. The fruit must never be transferred into a box or barrel; it must not be transported in vehicles not provided with good, flexible springs. It should be trans-



ported as carefully as eggs, if not more so; in the fruitery it should be placed only in small boxes or baskets, so that it may be gone over every month to take away any decayed ones. If all this be done, instead of selling our apples at reduced prices, we will get remunerative prices for them on our winter markets.

I conclude this short essay on the cultivation of orchards in general by asking the Honorable President and the Directors of the Pomological Society of the Province of Quebec, in view of the very reduced price of apples in our eastern section, to take the necessary steps to have a Canadian agent in England, or in some other European port, to look after our shipments of apples and other fruit from the Province of Quebec, and to affect the sale of the same in our name, remitting the proceeds to us by draft or otherwise, so as to open up a remunerative market for us. If matters continue at all as they are, we, in the eastern part of the Province, will before long have from 150,000 to 200,000 barrels of apples to ship. This year at Abbotsford we have over ten thousand barrels of apples to put on the market. We should also have a shipper in Montreal, to whom we could send our apples with every assurance of prompt shipment, who would receive the proceeds of the sales effected by the European agent, and afterwards remit us the net results of our shipment to him, in accordance with the arrangements made by the society.

I beg to thank you for the kind attention you have given to a person who is not accustomed to write on such a subject.

Alexander .....  
 American Baldwin .....  
 Antonovka .....  
 Ben Davis .....  
 Blenheim Orange .....  
 Canada Baldwin .....  
 Canada Red .....  
 Delaware Red W .....  
 Duchess .....  
 Fall Queen .....  
 Fameuse .....  
 Gano .....  
 Golden Russet .....  
 Grimes' Golden .....  
 Haas .....  
 Hislop .....  
 Larue .....  
 Lawver .....  
 Longfield .....  
 Martha .....  
 McMahan .....  
 McIntosh Red .....  
 Northern Spy .....  
 North Star .....  
 Ontario .....  
 Peach .....  
 Pewaukee .....  
 Plumb's Cider .....  
 Pomme de Fer .....  
 Pomme Grise .....  
 Pride of Stanstead .....  
 Quaker Beauty .....  
 Red Astrachan .....  
 Red Streak .....  
 Rhode Island Gree .....  
 Rochelle .....  
 Salome .....  
 Shaker Pippin .....  
 St. Lawrence .....  
 Siberian .....  
 Swayzie .....  
 Talman Sweet .....  
 Tetopsky .....  
 Transcendent .....  
 Wealthy .....  
 Whitney .....  
 Winter St. Lawrence .....  
 Winter Strawberry .....  
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 Yellow Siberian .....  
 Yellow Transparent

**CRANBERRIES.**



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