

THIRTIETH ANNUAL REPORT
OF THE
FRUIT-GROWERS' ASSOCIATION
OF
ONTARIO.

1898

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO.



TORONTO.
WARWICK BRO'S & RUTTER, PRINTERS & C., 68 AND 70 FRONT ST. WEST.
1899.

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To the Honorable John Dryden, Minister of Agriculture :

SIR,—I have the honor to submit for your approval the Thirtieth Annual Report of the Fruit Growers' Association of Ontario. The discussions therein contained are upon matters of great importance to the Fruit Growers of our Province, such as the best export markets and the best and most economical methods of transportation.

I am, Sir,

Your obedient servant,

L. WOOLVERTON,
Secretary.

GRIMSBY, January, 1899.

FRUIT GROWERS' ASSOCIATION OF ONTARIO.

OFFICERS FOR 1899.

President.—W. E. WELLINGTON, Toronto.

Vice-President.—W. M. ORR, Fruitland.

Directors.

District No. 1	.....	W. A. WHITNEY, Iroquois.
" 2	.....	R. B. WHYTE, Ottawa.
" 3	.....	GEO. NICOL, Cataraugui.
" 4	.....	W. BOULTER, Picton.
" 5	.....	THOS. BEALL, Lindsay.
" 6	.....	E. C. BEMAN, Newcastle.
" 7	.....	M. PETTIT, Winona.
" 8	.....	A. M. SMITH, St. Catharines.
" 9	.....	J. S. SCARFF, Woodstock.
" 10	.....	J. I. GRAHAM, Vandeleur.
" 11	.....	T. H. RACE, Mitchell.
" 12	.....	ALEX. MCNEILL, Walkerville.
" 13	G. C. CASTON, Craighurst.

Auditors.—A. H. PETTIT, Grimsby ; GEO. E. FISHER, Freeman.

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FRUIT GROWERS' ASSOCIATION OF ONTARIO.

The annual meeting was held in Court House, St. Catharines, on December 1st and 2nd, 1898.

The President, Mr. W. E. Wellington, took the chair, after which the following committees were duly appointed :

Fruit Exhibit : Messrs A. H. Pettit, A. M. Smith and Edward Morris.

Resolutions : Messrs. M. Burrell and Thos. Beall.

New Fruits : Profs. H. L. Hutt, W. T. Macoun, the President and the Secretary.

Nominations : Messrs. Alex. McNeill and T. H. Race (by the President), and Messrs. Murray Pettit, R. B. Whyte and G. C. Oaston (by the Association).

FRAUDS IN FRUITS AT FAIRS.

BY A. M. SMITH, ST. CATHARINES.

It has always been the mission and aim of this Association to advance the interests of fruit growing and to encourage any object or project calculated to benefit the fruit grower; and the work that it has done in the past gives ample evidence that its mission has not been in vain. When we compare fruit growing of to-day with what it was forty years ago in this Canada of ours, and see what rapid advancement it has made, and realize that it has largely been accomplished by the efforts of this Association in introducing varieties adapted to our country, and new methods of cultivation, fertilization and combatting insect enemies and diseases affecting fruit, and devising better methods of packing, transporting and marketing, we can but wonder it has done so much; indeed we almost wonder if it can do any more, until we take up the programme before us to-day and see on it such questions as "How can we prevent fraudulent packing?" "How can we punish the dishonest packer?" and the subject assigned to me: "Frauds in Fruits at Fairs." All this suggests that there is a moral side to this business that has not been sufficiently cultivated, and which needs attention. I believe it is just as much the duty of this Association to introduce good morals among fruit growers and assist in their cultivation as it is to develop good fruit, and it is as much their duty to point out and warn the public of the evils of fraud and deception in packing, marketing and exhibiting fruit and trying to prevent it as it is to warn the public of the danger from insect pests and fungoid diseases and how to exterminate them. If we could devise some effectual means of exterminating these evils we would confer a greater good upon the public at large as well as on fruit growers, than we have by any act in the past. I shall not attempt to answer the questions regarding dishonest packing, but would simply remark that a man who would show fruit at a fair as his own that his neighbor grew, would be able, perhaps, to throw some light on the question if so disposed, or at least be well acquainted with the business.

Although the Fruit Growers' Association of Ontario does not give prizes at horticultural exhibitions and fairs, it always takes a deep interest in them, believing if they are rightly conducted they are a great means of educating the people in fruit growing and they have taken great pains in formulating and publishing tables giving the relative value of fruits for the guidance of judges at fairs; and they have often recommended to directors of fairs suitable persons to act as judges, and it is with chagrin they see anything on

the part of either directors, judges, or exhibitors that indicates unfairness to any one, or fraud in any individual for the sake of gain. But that there is fraud, if not perjury, at many, if not all of our fairs in connection with fruit exhibits, I think no one who is familiar with fruit exhibits will deny. There is a certain class of exhibitors whom you might term professionals, who grow very little, if any, fruit themselves, but who buy, beg or borrow—to use a mild expression—all the best samples the country affords, and go from one fair to another showing them as their own production, and raking in the prizes—sometimes they go singly, and sometimes they club together and divide the spoils. I have even heard of their getting themselves put on as judges when, from some cause the appointed judge was absent, and judging fruit they were interested in themselves. I think it is one of the rules of all Agricultural Societies that the grain, vegetables and fruit must be grown by the exhibitor, and he must swear or certify to that effect when making his entries. Now, if a neighbor of mine shows fruit grown on my trees, no matter how he comes by it, and signs a certificate that it is his own growing, what would you call it? I know many men do this who would not like to be called dishonest or guilty of fraud, and they argue that they are not defrauding the Society, as they would have to pay the prizes to someone in any case; but they do not stop to think they are defrauding their neighbor and obtaining money under false pretences. I fear that, in many cases, directors wink at this kind of work and think it helps the show to get out these fine displays. I think they make a mistake even in this regard, for this practice has become so prevalent that many honest fruit growers will not bring out their fruit to compete against these professional prize takers, and thus many of our best fruits are kept back from exhibition. If directors of fairs are going to allow this sort of thing, let them amend their rules so as not to make men swear falsely and encourage them in dishonesty. I have noticed, with pain, that many of our young men are getting into this business. They are naturally anxious to attend fairs, and here is an opening to pay their way, have a good time and make a little money out of it besides, so they fall into the temptation.

I do not know what means to recommend to exterminate this evil, but I think this Association should at least enter its protest against such a state of affairs, and the officers of all agricultural societies should so amend and enforce their rules that these frauds may be suppressed.

Mr. BURRELL, (St. Catharines): I always understood it was a rule at fairs that visitors should exhibit what they grow themselves. I understand, however, that at Toronto Fair you have not to sign a declaration of that kind. It is very hard to refuse a neighbor who comes in for some specimens as he is making up a variety. It is difficult when there is a rule that exhibitors must sign a declaration that the fruit is their own growing.

Mr. SMITH: Of course there are certain collections open to the general public; but if there is not such a rule as that, and you do not have to sign a document of that kind, I would like to know it.

THE PRESIDENT: Being a Director, and also Chairman of the Fruit Committee of the Toronto Fair, I would say that the rules and regulations are that all exhibits must be the *bona fide* produce of or grown by the exhibitor. We do not go the length of asking every man to make a declaration to that effect, but if we are shown on complaint of an exhibitor, or anyone in fact, that fruit so exhibited at the Exhibition was not grown by the exhibitor, that fruit would be ruled out and not be passed upon. It is just the same way in the naming of varieties. The rule is very strict in that respect, and it lies in the hands of the judges to throw out any exhibit, no matter how meritorious it may be, if there is one wrongly named plate in the collection, for instance. It seems sometimes a little hard. The idea is to have all fruit exhibited true to name, because we wish as far as it is possible to make the exhibition an educator in the fruit interests, and we think that centered there in Toronto where the large exhibits are made everything should be correct; and the judges who are present in the room know that I have always, hard as the case made be, insisted that the rule be strictly adhered to in that regard. Of course if it were thought necessary, or in the interest of the fruit growers, that a declaration should accompany every exhibit we would take measures to carry that out.

Mr. ORR, (Fruitland): I think the object of giving awards for fruit exhibits is to encourage growers to grow the very best fruit that they can grow. As far as Toronto Fair is concerned, I think the fruit exhibited should be strictly the produce of the party exhibiting. Probably that does not apply to counties, at the Toronto and London Fairs where we have people from all parts of the world, many from neighboring States, I think we ought to have the very best possible exhibit irrespective of who is the grower. Whether it would be desirable to have another class for exhibits of that kind I don't know, but I don't think we should hamper having the very best possible exhibit gathered from where you will, where so many people see the exhibit and see the products of our country.

Mr. BURRELL: I think Mr. Orr's objection is well taken. I only spoke because I think that if there is a stipulation of that kind, whether it is expressed in the way of requiring a declaration on the part of the exhibitor or not, it should be made more emphatic, because if a man is going to show what he does not grow when there is a rule against it, then he may just as well perjure himself right out by making a declaration, and that will keep any man who feels a little dubious about doing it; but I would have it right open or else have him sign a declaration, and I would make it clear. The thing should be stated either one way or the other. I think Mr. Orr's views are correct as far as Toronto is concerned.

THE PRESIDENT: I may point out that it does not prevent us from having an exhibit that will really show what can be done in Canada no matter where the fruit is grown, because there is a class at present open to Societies. It is a class we have been trying to encourage of late years. That of course enables them to gather the best specimens of fruit in their district, and consequently in that exhibit you have the best the land produces, while in the other class where there is individual competition you have what I think is only fair, the actual growth by the exhibitor. Of course I am your representative there, and if this meeting wishes that that clause should be done away with I could take means to have it done, but with the open classes that there are at present I don't think it would be advisable.

Mr. BURRELL: The only open classes now are for Societies?

THE PRESIDENT: That is all.

Mr. BURRELL: That has only led to two Societies, Oakville and Burlington, exhibiting, and that is over an immense range of fruits that no one man is likely to touch; and it is in the small selections where this thing is done. I think it should be thrown open—either no declaration at all wanted, or a declaration wanted, so as to leave no half way. Have no clause at all, or else have a clause expressly stating, and have a man sign it when he makes his entry.

A. McNEILL, (Walkerville): Would that it were possible to get back to the good old classic times when they used to compete for the glory of the thing. I would like to see the rules framed so as to throw more on the honor of the person exhibiting, and that less stress should be placed on the money question. It is not desirable even for the purpose of securing a good exhibit of fruit that this class of men should be encouraged.

We as Canadians have a reputation which I think without undue modesty we can claim, of being honest, and as far as the regulations can be framed to put down that kind of thing and secure honesty in that respect the better. I think the Toronto people have done well in putting a premium upon the exhibits of fruit from Horticultural Societies, and more stress should be laid upon that. Horticultural Societies should look to the educational value of these collections, and look upon it as part of their legitimate work to make the exhibits and to make them educative. Less stress should be laid upon the money side and more upon the credit of having a good exhibit for the individuals and the societies and the country in they which live.

Mr. ORR: When we get rich and can do as they did in the classic land, where the members of Parliament served without money, and it was all honor, and they could afford to live for honor, all right; but I am satisfied it would very seriously interfere with our exhibits at the fairs if the prizes were done away with. I know men that go out in their orchard, and up and down the country gathering fruits that no society would do,

FRUIT GROWERS' ASSOCIATION.

and I know these men get together splendid exhibits that are a credit to our country, and I do think it would be well to have a class just for that kind of thing.

Mr. A. M. SMITH: You will often see men going through the country begging or borrowing or buying fruit—and they have the excuse, that they are gathering for certain societies—that there is a class, as there is in Toronto, open to the general public or any association or society. They go through the country and gather up this selection of fruit, and a very close observer will often find some of that fruit on a plate of private individuals, shown as their own producing. I know what I am taking about, because I have seen some of my own fruit shown in that way, that I had taken pains to fix so that I could identify it.

Mr. CASTON (Craighurst): Mr. Smith's paper was aimed at what may be called the professional exhibitor, and we have a number of them. At the Industrial this fall one of the experimenters told me that a party there wanted to purchase the best selection of the fruit and offered him a pretty good figure for it, and he asked me what I thought about it, and I said "The best thing is to sit on him and sit on him heavy too." He was one of these professionals. They follow up the fairs as long as they last during the fall. It is a money business with them. If, as Mr. McNeill suggested, we do away with the money prizes and have people exhibit for the honor of the thing in the shape of medals or diplomas, there would not be that inducement to these professionals, as there would be no money in it for them. On the other hand, as Mr. Orr suggests, we would not have as many exhibitors if the money prizes were withdrawn. It is rather a troublesome question to deal with, and I hardly know how we are going to get at that class to stamp them out.

Mr. ROBT. THOMPSON (St. Catharines): I don't think we can stamp them out. As far as making a declaration is concerned, the rules of all societies at present are that any person, any other exhibitor, can make a protest against one of these professional men. How often is it done? When it is done, in 99 cases out of a 100 these professionals will take that declaration and swear that the article is their own growth and produced on their own place. If this declaration were made compulsory when they are making the entry, Mr. Burrell would have some good fruit and of course he would exhibit as his own. The professional will do the same thing. They have done it in the past and will do it in the future. I am sorry we cannot confine it to the growers, but with my experience of fairs I know that it is impossible to do it, and, as Mr. Orr says, it would work detrimental to our fruit exhibit. I believe that all the large exhibits should be thrown open and that clause done away with, because I am satisfied it will never be observed.

Mr. BURRELL: I am inclined to think those ideas are right as far as the Provincial show goes. I believe we can shut out all those men in the different localities, because they are known and it is known what they grow, but at Toronto you will never shut down on them altogether, and I would say either push it so as to make it very stringent or else let it go. I would ask Mr. Smith his views on ringing grapes. Everyone in Toronto who is a judge of grapes must know that the majority of the prizes in Toronto go to the grapes that are ringed. We all know the process. Is that to be upheld? Lots of the prizes this year were to be given for grapes that any man knows had been ringed. That is certainly a very unfair thing to the man that shows the grape in its natural state.

THE PRESIDENT: If the meeting feel that that should be looked after it would be a very easy matter to stop it by giving the judges power and authority to throw out all ringed grapes, which would soon bring that to an end. It is simply a question now whether you think they should be thrown out.

Mr. BURRELL: Many men do not ring their grapes because they do not think it is a fair way of competing, and at the same time they know they will not get the prize unless they do ring them. Everybody should understand that they will be allowed to ring them. One judge told a competitor who was complaining that he did not get a prize, "You ought to ring them."

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Mr. CASTON : Do you think that the judges can always determine ?

Mr. BURRELL : I do not say you always can. but there are many cases where there is absolutely no doubt about it.

Mr. CASTON : I should think it would be very difficult for a judge to decide.

Mr. BURRELL : Sometimes it is very difficult, but it is sometimes very easy.

Mr. HUGGARD (Whitby) : If we were to adopt the system Mr. Burrell advocates, the best in fruits would not be exhibited at all. That is, giving none of the prizes to grapes that were ringed. It would apply equally to all manner of cattle, and horses, and stock ; the better you feed it and the better you doctor it up, it would make it win a prize all the sooner. I don't see any reason why, if a man goes to the trouble to ring his grape vines and produce a few clusters of extra good grapes, it would not be equivalent to another man who would pick most of the pears off his pear tree and bring in a few choice ones of very extra ones. You would have to prevent the one just as much as the other. My notion is to let everybody bring the best that they can possibly produce ; but have a specific rule and see that it is carried out, that in the case of any one begging, borrowing, or stealing fruit that is not his own, the prizes should be withheld. The majority of the exhibitors send in their exhibits for the money value that is in the prize. Our township people go there for the purpose of getting money out of the exhibitions, and if they are awarded the prize and don't get it, no matter how trifling it is, you will hear a great deal of squealing against the association or society. I think the best way that an association can do is to encourage growing grapes of the largest possible kind, whether ringed or otherwise, and the best of every kind of fruit that we are capable of producing, and if a rule which is severe enough now is applied to these professionals who collect fruit through the districts and exhibit it as their own, they will soon drop out.

R. B. WHYTE (Ottawa) : It seems to be a question whether the ringed grapes are the best. I think it is generally understood that they are bad in flavor, and would never be bought by anybody in competition with other grapes ; therefore ringed grapes should be prohibited. They are large and watery and of poor flavour. In our Horticultural Society we had a little trouble with exhibitors by requiring every member in making his entry to sign a declaration that all articles exhibited by him were of his own growth. We have not had a bit of trouble this year. I cannot see any object in having an exhibition at all if it is not the production of the individual grower. I do not think we can take a better way of having a small exhibition than by allowing people to go about and collect what they do not grow. There are some fruit men along the St. Lawrence that gather up wherever they can. Our Horticultural Committee are trying to stop that, but the fact in the past has been that the local fruit growers did not gather in competition because they had no chance with those men that gather wherever they can. It deterred so many people from exhibiting that it had the effect of making a smaller exhibition than we otherwise would have.

A. H. PETTIT (Grimsby) : I think every exhibitor in a local show should sign a certificate that his fruits are his own product. I think it is very unfair to individual growers who want to make an exhibit of their own products at the fair to come in competition with those who come from all over the country ; but I do think it is quite necessary to have in our exhibitions, particularly in Toronto, a sort of go-as-you-please class, where a man can collect the products of the whole country if he wants to and show them ; but I would put that exhibit in this way, that everything should be very correctly named. We don't want a lot of fruits in this class exhibited to the public given fictitious or other incorrect names. Why ? Because that is exhibited as an educator of the people ; it is there for that purpose ; it is to show the resources of our country and the variety of fruit we can successfully cultivate, and I think it is a good thing to have it, for the reason that you get a big exhibit of this great Dominion of ours at that exhibition, and I think that is what we want, but the individual who is showing his own product wants to be protected by this form of declaration that they are his own product. As to the grape question, I have been a judge on several occasions, and I say that if you passed a rule that ringed grapes are to be ruled out, there should be a very plain card placed on

every one of those plates, and the judge should write on that card in plain language that they are ringed grapes; for if the public passing by the tables and seeing the work that you have left behind you, all the finest plates upon the table ruled out, want to know what is the matter? They will tell you at once you do not understand your business. The plates look a great deal better than those you have given the prizes to. Now, here you are educating the people. Let us do it properly if you are going to do it; let ringed grapes be plainly marked so that people can see why judges rule them out. In an exhibition to show what we can produce in this country I don't know that you should rule out ringed grapes any more than you would an animal that was overly fat. You see lots of animals shown at these exhibitions that we know are too fat for breeding purposes, and your ringed grapes come the same way—they are a little too large in size to have that quality and flavor that is so desirable. If we look at the exhibitions as an educational institution, let us encourage them along the educational lines as much as we can, and give a go-as-you-please class for Societies, requiring that every fruit in it be correctly named. Then if we protect the individual grower that has to come in competition with this class of exhibitors I think you will come pretty nearly to the right thing.

M. PETTIT (Winona); I have judged grapes for the last fifteen or twenty years, and I defy any man to say in every instance whether grapes have been ringed or not. If a vine has been ringed very early the grape will appear very bloated and the flavor insipid, but if you ring it later on you will increase the size and color and no judge can tell whether it has been ringed or not, there are so many degrees of it, depending on the time and the season at which the vine has been ringed. The prize list says "the best." My experience in judging and working with other judges is that those very large overgrown grapes do not always get the prize. For my own part I very often go for throwing them out where there are better flavored and nice even grapes in the same class, and I have just made it stand that way. It works all right. We show people fine fruit, and if the judges do their duty they go there and show the people what good fruit is, and the kind of fruit that should be put upon the market and upon the tables should be well colored, well flavored fruit. (Applause.)

Mr. BURRELL: I do not think it is quite fair to argue, as Mr. Huggard and Mr. Pettit did, that ringing was a sort of natural process. I don't care whether grapes are ringed or not in Toronto Fair as long as everybody is allowed to exhibit them; but the ringing of grapes is not a normal process like the thinning of fruit, or the fattening of cattle. If I were to use a comparison I would say, suppose an animal eats a bushel of grain and gets very fat, but it is going to die in twenty minutes, it would not be fair to exhibit it. It is not a normal or healthy process.

Mr. McNEILL: Nor a commercial process.

Mr. BURRELL: No. If they admit ringing, all right, but let everybody ring, because otherwise it is competing on an unfair basis.

The PRESIDENT: Unless you wish to take some definite action on the matter, which I should judge from the discussion could hardly be done, we will have to close the question here. Judges will have to take this matter into consideration, as they always do.

IS FRUIT GROWING CONDUCTIVE TO MORALITY?

By F. G. H. PATTISON, GRIMSBY.

In introducing his paper the writer said: Before reading this paper, I would like to say I do not wish it to be taken too seriously. It has been my misfortune sometimes, notably at Kingston, to have my serious papers taken in a jocular strain. I don't wish that to be taken in an opposite way—that a paper that is intended to be taken in a slightly jocular strain should be regarded from a too serious standpoint. It is peculiarly fortunate

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to the interest of this paper that I am about to read that Mr. Smith has already directed your attention to frauds in fruit at fairs. In this short paper, it is my object to throw what I think is a new light upon the temptations and the difficulties surrounding the business of fruit growing, and one which the general public, and also fruit growers themselves, have entirely ignored up to the present time. My proposition is this: That there is an inherent original sin in fruit itself, which exposes those who plant it in the nursery, those who grow it in the orchard, and those who sell it on the market, to peculiar trials and temptations. On looking back to the earlier stages of the human race, we are told in the story of the Garden of Eden how the Devil, in the guise of a serpent, entered into, not a cabbage, nor a potato, but an apple; and since then, apparently, not only apples but all other fruits, although pleasant to the eye, and seductive to the palate, have retained that primeval devilishness. If this be *not* the case, how do we account for many well-known facts relating to the fruit business? For example, the way in which the large apples, peaches, strawberries, etc., find their way to the top of the basket, and the small, wormy, and bruised ones to the bottom. The outside public say that the growers put them there. I know this to be erroneous, because the growers have told me that they do not, and I will undertake to say that if one of the outside public were to ask any fruit grower in the whole Province if he put the large ones at the top and the little ones at the bottom of a basket or barrel, he would reject the idea with scorn. But the public say that the large apples, etc., *do* come to the top and the small etc., to the bottom. Are we then to consider the public as liars? By no means. This seemingly inconsistent state of affairs had long puzzled me, until I was led to make the following experiment. I collected a basket of fruit and put it by itself in the fruit house, carefully placing the small and poor specimens at the top, and the large fine ones at the bottom. It was then left by itself for two or three days, without being watched or interfered with. At the expiration of that time, upon examination, the large ones were all at the top and the little ones at the bottom. This experiment has been repeated several times, with a similar result. It is true that certain scoffers have suggested the children as the authors of this strange metamorphosis, failing them that it was owing to rats. But to both of these objections I think "rats" is the proper reply. I am forced, then, to the following conclusion, viz: That if fruit in a basket or other package be left to itself and remain quiescent for a considerable period, that the big ones will work themselves to the top, and the small, wormy ones to the bottom. Now to prevent this requires great watchfulness and care on the part of the grower, added to high moral principle, and the purchaser little knows what a struggle has been gone through, what a moral victory gained, when he remarks, on examination of a basket of fruit he has purchased from the store, "Why, I have actually got a basket that is good all through!" But this same character follows the fruit into the hands of the commission men and retail dealers. How else do we account for the marvelous discrepancies between the actual sales and the growers' returns therefrom, of which great complaints are being continually made? No doubt the commission men are an honourable body, but, unless the moral qualities of people handling fruit are unusually strong, the innate devilishness of the fruit itself overcome them. For to the commission man the fruit-devil whispers: "That was a splendid sale you made, but you need not return the full amount to the grower. Ten per cent. is but a beggarly amount to receive for a sale like that, owing to *your* energy and business capacity, besides he will be satisfied with much less." And too often this fruit-devil is listened to, the commission man falls, and the grower suffers.

Look at the number of "wet," "slack" and "wasty" returns that come back from the old country. Think you that there is no fruit-devil at work there? I am afraid that the English commission man too often, like his Canadian *confreere*, does not exhibit sufficient moral fibre to withstand his temptations. Even in the nursery row fruit trees exhibit their evil propensity, for which some blame the nurserymen, who are in the main a fine body of men of more lofty principle, who would scorn of themselves to do anything wrong, and yet, varieties first-class when planted, turn out but third class at bearing time, ironclads fail to resist the slightest frost, and prodigious bearers decline to bear anything. Plenty of other instances might be brought forward in support of my discovery; but why take up more of your time? The more you study the matter, the

more you will see the truth of my discovery, and the more apparent it will be that high moral principle is the first requisite for the fruit business; and it is much to the credit of the noble body of men now engaged in the business that matters are not worse than they are, that occasionally the fruit at the bottom of a basket is not much worse than at the top, and that sometimes there are no wormy or bruised apples at the bottom of a barrel.

What, then, should be done to remedy this state of affairs? Firstly, gentlemen, let us be thankful that this discovery has been made; now that we know the real cause we can take measures for its prevention and cure. Secondly, a board should be appointed by the Government, selected from our highest and most moral citizens, to award certificates of moral character to anyone about to engage in handling fruit or fruit stock. Thirdly, no one should be allowed to engage in growing or selling fruit or fruit stock without such a certificate. Fourthly, the writer should be president of the board at a handsome salary. Fifthly, no fruit package should be left alone for any considerable period. By the adoption of these measures we can, in time, attain to perfect honesty; and, instead of its being a matter of surprise for a private purchaser to receive an honest basket of fruit, it will be the most ordinary, every-day occurrence.

OBSERVATIONS ON RUSSIAN FRUITS AT THE CENTRAL EXPERIMENTAL FARM, 1898.

By W. T. MACOUN, HORTICULTURIST, CENTRAL EXPERIMENTAL FARM, OTTAWA.

It is a great pleasure for me to be with you this morning. It is the first time that I have had the pleasure of attending a meeting of the Ontario Fruit Growers' Association. Knowing as I do full well the high esteem in which you held Mr. Craig, the late Horticulturist of the Farm, I feel that without your sympathy and co-operation the work that I may do there will not be such as if I felt you were all my friends.

Before giving my observations on Russian fruits for 1898, let me relate the history of these fruits as grown at the Central Experimental Farm, Ottawa.

A large number of Russian fruits have now been tested for ten years at the Central Experimental Farm. In the year 1888 there were planted in the orchards 133 supposed varieties of apples, twenty-eight of pears, eight of plums, and thirty-eight of cherries. Since that time others have been added at intervals, and notwithstanding those that have been winter-killed, there are now about 160 supposed varieties of apples in the orchard, eighteen of pears, twenty-eight of cherries, and seven of plums. A few of the apple trees planted in 1888 fruited in 1890. The trees did well and made vigorous growth up to the year 1892, when blight appeared in the pear orchard and continued to spread throughout the summer and autumn, notwithstanding all efforts to hold it in check. All the Russian varieties of pears were affected, twenty-five trees being killed to the ground. The apples were also affected that year, though not so seriously. In 1893 the disease appeared earlier in the season and committed great ravages, both among the apples and the pears. Many apple trees were reduced to stubs, while the pears were still more badly injured than in 1892. This left these orchards in a very dilapidated condition. Some trees had died altogether, others were reduced to stumps, and again others which had large diseased limbs sawn off, had lost their symmetry. The trees were not so much affected in 1894 and 1895, but owing to the severity of the winter of 1895-6 a large number were root-killed; the last of the pear trees originally planted going at that time. Further injury from root-killing occurred in the winter of 1896-7. During the past two seasons, most of the apples and pears which have been replaced, made good growth, and some of the apple trees which were badly affected by blight are regaining symmetrical proportions. Out of about 288 apple trees planted in 1888, there are now 149 trees living, 139 having died, of which 104 died in the spring of 1896, twenty-seven in the spring of 1897, and eight this year.

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The cherries did well at first, beginning to fruit in 1890. In 1895 a very fine crop was produced, but during the following winter nearly all of the trees were root-killed. This was owing, in a large measure, to their being grafted on tender stocks. Since that time they have been propagated to some extent on Bird Cherry (*Prunus pennsylvanica*) stock. Some trees propagated on this stock in 1891 continue to do well. An exception to the almost general winter-killing of the cherries in 1895-6 was the Koslov Morello, sent out by the Ontario Fruit Growers' Association in 1890. Out of twenty-four trees only five died from the effects of that winter. These cherries are, however, on their own roots. The Russian plums planted in 1888 have all been winter-killed with the exception of two trees, Early Red and Voronesh No. 102, although these two trees are not very healthy. Other varieties have been planted of late years and some of these are still doing fairly well.

Russian Fruits, 1898: Last winter was not a hard one on trees and there were scarcely any losses. Most of the trees in the Russian apple orchard, which were old enough, produced a good crop of fruit this year. Owing to the extremely hot, dry weather the summer apples—to which class nearly all the Russian varieties belong—dropped very badly. The trees on the whole made fair growth. No blight was noticed. About fifty varieties among those planted in 1898 and 1890 look thrifty, but some of these are evidently synonyms, which would reduce this somewhat.

Of the varieties which fruited this year, the following seem to be the most promising: Livland Raspberry, (Melonen). There seems to be no difference between these apples as grown at the Experimental Farm. Tree, upright, fairly vigorous; fruit, medium size, roundish, conical; skin, pale yellow, well splashed and washed with bright red; flesh, white, tinged with pink near skin, firm, crisp, juicy, sub-acid, pleasant flavor; good quality. Ripe, August 3rd.

Switzer: The Switzer grown at the Experimental Farm does not color so highly as that grown by Mr. R. W. Shepherd of Omo, Que. Tree, moderately upright, fairly vigorous; fruit, medium size, oblate; skin, pale green, almost white, firm, crisp, juicy, sub acid; good flavor with a high aroma; very good quality. Ripe, August 10th.

Pointed Pipka (Summer Arabka, Broad Cheek, Throne, 135 M. Budd): All the trees under these names seem to be of the same variety. Tree spreading vigorous, fruit above medium size, oblong, conical, ribbed; skin, pale yellow, well splashed and streaked with purplish-red; flesh, white, rather coarse, juicy, mild sub acid, pleasant flavor, good quality.

Romna (Hibernal, Apert, 244 Beadle, Longfield 56 M.—not Longfield as generally grown—Silken Leaf): These are all apparently the same apple, as grown at the Experimental Farm. Tree, vigorous, spreading; fruit, above medium size, sometimes large, oblate, conical; skin, greenish-yellow, streaked and splashed with purplish-red; flesh, yellow, tender, melting, juicy, acid; quality, medium. Ripe last week in September. This is more valuable as a cooking apple than as a dessert fruit. It is one of the most vigorous trees that we have, but not more so than McMahan White, which, in my opinion, is a better apple.

Plikanoff: Tree, planted 1893, vigorous, spreading. Fruited for the first time this year. Fruit, large, roundish, slightly conical; skin, yellow, well washed with bright red and splashed with a darker shade; flesh, yellowish, tinged with red, rather coarse, fairly juicy, sub acid, good flavor; good quality. Season, probably October.

Repka Winter: Tree, upright, fairly vigorous: fruit, above medium size, oblate, flattened; skin, yellowish-green lightly streaked and splashed with purplish-red; flesh, white, crisp, fairly juicy, mild sub-acid; quality, medium. Will probably keep until February.

Antonovka Though sometimes favourably mentioned, this will, on account of its lack of color—it being a yellow apple—probably not be a profitable variety.

Winter Arabka: Did not fruit here this year. It is considered one of the best of the Russian varieties, and is a winter apple.

The Switzer and Pointed Pipka are the only two varieties fruiting this year which can compare with dessert apples of their season in the best apple districts of Ontario.

Other varieties favorably spoken of by those who have tested the Russian varieties in Canada are:—Stettin Red, Gipsy Girl, Titovka, Flat Aport, Amtmann, Boradovki, Belin, and St. Peters.

In the year 1890 a Russian seedling orchard was planted comprising about 3,000 trees grown from seed imported from E. Goegginger, Riga, Russia. The seed from which these were grown was supposed to be taken from apples grown North of Riga. Of these there are now 1,016 remaining, the rest having been killed either by blight or winter. These began to fruit last year, and this year about sixty trees bore fruit. None of these apples are sufficiently promising to be worthy of special mention, but a few of them are as good as the majority of the Russian varieties. These will be further tested at Ottawa, and scions sent to the farms at Brandon and Indian Head, to determine whether they are hardy there or not. The rest of the trees which fruited this year will be cut out.

PEARS: The Russian pears, planted since 1895, have done well and have not been much affected by blight since that time. Only one variety, the Baba, fruited in the pear orchard this year, but two others, Gliva Kurskays and Sapieganka—which have borne heavy crops annually in the Director's experimental garden for some years—were again loaded this year. The Russian pears yet tested at Ottawa are in season but a very short period when they get soft and mealy. If used at the proper time, they are fairly good to eat raw and are very nice when preserved, but are not worth planting where other varieties will succeed.

PLUMS: The Europeans plums have not done well in the orchard at the Experimental Farm. The situation is very exposed and the trees have suffered severely. This year four Russian varieties fruited, namely, White Nicholas, Early Red, Voronesh (blue) and Yellow Voronesh. All of these but Voronesh (blue) are of good quality. The Yellow Voronesh is almost as large as Yellow Egg and of somewhat the same shape, is juicy, sweet, and of good flavor; cling stone; good quality. Ripe, August 22nd. Two of the hardiest of the European class of plums yet tested are the Glass Seedling and Richard Trotter.

CHERRIES: Of the cherries planted in the orchard from 1888 to 1895, the following varieties have survived—Strauss, Minnesota Ostheim, Ostheim, Cerise d'Ostheim, No. 207, Koslov Morello, Heart-shaped Weichsel, Orel 24, Orel 27, Riga 18, Shadow Amarelle, No. 206, Orel 25, Griotte du Nord, Spate Amarelle, Brusseler Braun, June Amarelle, Lutovka, Amarelle Hative. Most of the trees of these varieties which were planted in 1888 do not look as if they would live much longer. These trees are on tender stocks. Trees of a number of varieties in a nursery row, propagated on *Prunus pennsylvanica* in 1891, are very healthy and produced a heavy crop of fruit this year, as did also most of the other cherry trees which were old enough to bear. The best of the European and Russian cherries ripened in the following order this year: Amarelle Hative, June 26th; June Amarelle, July 2nd; Shadow Amarelle, July 3rd; Heart-shaped Weichsel, July 8th; Griotte du Nord, July 8th; Orel, July 25th; Cerise d'Ostheim, July 12th; Brusseler Braun, July 25th; Koslov Morello, July 26th. These cherries gave a continuous succession of fruit for about five weeks. The apparent gap between July 12th and July 25th is filled up by the Ostheim, the fruit of which ripened rather unevenly this year.

The Koslov bush Morello cherries, received from the Ontario Fruit Growers' Association in 1890, deserve special mention. These little, bush-like trees, after eight years' growth, now average only about 5 feet 6 inches in height. There are 21 trees yet living out of the original planting. Of these, 15 produced fruit this year, nearly all of which appear to be different. This is the first year that they have fruited to any extent, although planted for eight years. Most of the trees produced fruit of inferior quality, some being bitter, and others very acid. Two of the most promising, on account of their hardiness and lateness in ripening, are the following Koslov Morello (R. 6, T. 29). Tree, bushy, height, 5 feet 6 inches. Heavy crop; fruit

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large, long, heart-shaped, slightly flattened, firm; stalk, very long, slender; suture, rather indistinct; skin, deep red; flesh, deep red, juicy, very acid; pit, large, long. Ripe, July 20th. Would probably make a good preserving cherry.

Koslov Morello (R. 6, T. 27): Tree, bushy, height 6 feet 6 inches. Fair crop; fruit, large, heart-shaped, rather deep red, firm; stalk, long, stout; suture, distinct; flesh, bright red, very acid; pit, large, oval, flat. Ripe, July 26th.

The observations made this year, and the opinions drawn, are unbiased, and should another year's experience change my views on the varieties mentioned I shall be glad to express them.

The SECRETARY: I am very glad to know what Prof. Macoun says as to the *Koslov Morello* cherry. I have five or six of those trees in bearing in the orchard, and I have been very favourably impressed with the cherry. As he says, there is a great difference in them. They are all grown as seedlings. Mr. Niemetz of Russia sent out 50 trees of that cherry to me in the year 1889; of which those sent to the Experimental Farm were a portion. He stated that the best way of propagating them was by the pit, and he thought they would begin bearing about five years from the seed. They have done so with me, although it is only the last two years that they have borne freely. As Mr. Macoun says, they are only bushes, and I think they ought to be grown as bushes and not as trees. I have mine about three feet apart in the row. I did not intend when I planted them to leave them so near together, but it has just proved to me that they might be grown in rows as we grow berry bushes, and cultivated as we do our berry crop, and that an acre would produce a tremendous yield of fruit. By picking the pits of the best fruit and planting them I believe we might continually improve on the quality and make a very profitable thing of growing that cherry for the market. It is very late, the latest cherry that I think I had in my orchard. Mr. Niemetz said that it was grown very largely by peasants in Russia, and he thought it might be very valuable indeed for the northern sections of Canada on account of its hardiness, and I also believe it would be valuable for the southern sections. It is figured and described in our Fruit Experiment Station Report of Ontario for 1897.

Mr. MACOUN: The Russian cherries have a flavor of their own, and this flavor is brought out distinctly when they are preserved. In the Ottawa local markets these cherries are sought after by the people there more than any others they can get. They always ask for these Russian cherries.

Mr. HUGGARD: You mentioned the Raba pear, considering it a hardy tree and a good fruit.

Mr. MACOUN: The tree that we have so far as I know fruited for the first time the year. The tree is apparently quite hardy. I think it was planted in the spring of 1896. The fruit is large; it reminded me of the Bartlett; to see it at a distance you would almost take it for a Bartlett pear. The quality is medium. If you take it at the proper time it is not bad at all; it is not high flavored.

Mr. HUGGARD: I set out three of them in 1896, and one of the trees had fruit on this year which was inferior to the Keiffer pear.

Mr. ORR: How does the blight show on these trees, and have the ordinary varieties grown in Canada blighted as badly as the Russian varieties?

Mr. MACOUN: No, the standard varieties have not blighted as badly as the Russian, although they have blighted considerably. It begins in the tips of the branches and runs in a very short time down the main stem. The practice Mr. Craig followed was to saw off the limb as soon as the blight appeared.

Mr. WHYTE: Mr. Brodie is here as a delegate from the Quebec Horticultural Society, and has had some experience in this line. We shall be glad to hear from him.

Mr. BRODIE: My experience in cherries has been similar to Mr. Macoun's, and I would like to recommend one variety, the *Griotte d' Ostheim*. The fruit is hardly compared with the Early Richmond, while the Early Richmond could not resist t^h early

frosts in the spring. The Griotte d' Ostheim had a very hardy crop. I put it on the hardy list of the fifteen varieties of cherries I had fruiting. My cherry crop this year, both of Russian and our own varieties, started to ripen about the 21st of June, and I had them right on in August, so that made a pretty long cherry season. With reference to the Russian apples, there are two varieties I suggest to be placed on the list; one we call Golden White, a fall apple, in quality very much like the Northern Spy and about as large, more conical in shape, fine, bright red color, and sells well on the local market. Another variety is the Regal. The *Mercanos* are very much like the Canada Red, only more conical in shape, a little larger than the Ben Davis, and quality very good. I think it is the only really good Russian apple that I have fruited so far. The rest of them are only comparatively fall apples. As to Russian pears, my experience is where you can grow the Flemish Beauty like we can in Montreal it is not encouraging to go into Russian pears, but there were two varieties of Russians I thought might be well worth a trial. Say *Casa bianca*, that I got from the late Charles Gibb, which was entirely different from the one I got from Prof. Budd of Ames College, Iowa. My situation there is a little more favorable to pear culture than the Experimental Farm at Ottawa. I am not sure how it would be for hardiness.

Mr. CASTON: I have been growing some Russian pears, and I think they are a very valuable acquisition. I think they would succeed over a large section of Ontario. With regard to Russian apples, it was the late Chas. Gibb and Prof. Budd who gathered most of those that were grown in a latitude 600 miles north of the City of Ottawa, and they were grown as dwarfs, and the snow was very deep and they got protection in that way. Seventy miles north of Toronto some of them have failed and were tender, but having them propagated on a hardy root and growing as a dwarf in localities where the snow remained deep they would succeed very far north. One of the troubles about those Russian fruits is that I don't think we will find any good winter apples among them—nothing e. g. that comes up to our Northern Spy. They seem to be mostly all early apples. For the most part they are hardy,—clean skinned and good bearers, and I believe they would be valuable for grafting on. I think with Mr. Macoun that a number are of the same variety with different names. I think it would be a good thing if they could be Americanized. Those Russian names are jaw breakers. Mr. Gibb made an attempt and published a pamphlet entitled "Nomenclature of the Russian Fruits," and he endeavored to straighten it up a little, but it is a good deal of a tangle yet. I have two varieties, one called the Hare Pipka, but they are close akin to the Alexander and the Wolf River. I believe the Russian apples and cherries would be very valuable in extending fruit culture farther north through this country. Most of them are hardy, and the Russian cherries for canning can scarcely be equalled—and that is mainly what cherries are grown for. They bear when they are young and they seem exceedingly healthy. They do not seem to be so liable to the black knot as a good many of the old varieties.

Mr. ARMSTRONG, (Queenstown): I would like to ask what protection those trees that were winter-killed at Ottawa had during the winter.

Mr. MACOUN: That winter there was a great scarcity of snow at the Experimental Farm; they had no protection from snow covering. They simply had a clover cover crop, which has been adopted at the Experimental Farm for some years. That year however the clover was killed, and it had not near the same protection that it would other winters on that account, there were more trees killed than would otherwise be the case. That was the winter of 1895-96.

Mr. WHYTE: That winter there were many apple trees killed. It was the most disastrous winter in the Ottawa district on account of there being no snow to cover the roots.

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PEACH BORER.

BY MARTIN BURRELL, ST. CATHARINES.

I have not had very much experience with the Peach Bark Beetle. As far as the Peach Borer goes I have done a little experimental work in the last year or two, and as we all know it is one of the worst insects we have to fight, especially on a sandy soil. Probably most of you know a great deal about its life history. What we call the borer is not the bark beetle, as most of the wood boring insects are, but is the larva of a moth a good deal like a wasp. The female moth is $\frac{3}{4}$ of an inch long, and is bigger than the male. The front wings are dark blue, and the hind wings quite transparent, and you can always know it from the shape of the body, which is a darkish blue with one large orange band around the abdominal segments. You cannot mistake it for any other insect. The male is very much smaller and inconspicuous. The wings are transparent, and there are some slight little marks about the body, but it is much smaller and less showy insect than the female. In this latitude I found that the moth never emerged before July 15th or 20th. It was thought at one time that the moth began to emerge very early in spring and commence laying, and it is rather an important point, as you can see, because in hunting out these borers, whether you put on a wash to prevent them laying the eggs, or put on papers, or whatever practice is adopted, it is necessary to know what is the best time to go to work. It was formerly thought that they came out very early, and it was necessary, in order to prevent them laying, to put on washes very early. As a matter of fact in New York State they do not come out until about July 15th, as Mr. Slingerland tells me at Cornell, and here I have never observed one out before July 20th. This is important for the reason that you are always safe if you can clear them out before that time, for you will destroy the crop for that year—that is you will prevent the moths emerging. If you use any wash to prevent the moths laying the eggs, the greatest difficulty is to find a wash that will remain on the tree the whole season, because the moths start emerging about the 20th July and keep on from that time until the 20th of October emerging and laying. There is only one brood a year. For instance, in the case of the moth that lays the eggs July 20th, the larva hatches and gets three-quarter grown by the late fall. It then passes the winter in the tree below the ground dormant, and the next spring starts working, and then turns into a chrysalis fairly early, about June, and remains about a month in the pupa stage. Those that come out in September do not hatch out until about the following September. The whole process is just about one year. That period of time extends very much longer than some people thought, and it is all the more necessary if you are going to have a wash to prevent the moth laying its eggs to cover the whole of that period from early in July to early in October. There are very few washes that will stay on the tree during that time intact, and if we go to the expense of two washes it makes the matter very much more cumbersome. Mr. Smith, of New Jersey, told me that he found 600 eggs in one moth, and Mr. Slingerland has found 300 by examining them with the microscope very carefully. They have found as many as 28 laid on one tree. I have taken out 14 borers on one tree, and of course the tree was nearly gone. The danger is worst on the smooth trees, because the tree of course is only about two inches through. If a half-grown borer is there it can almost girdle it. Every man should examine peach trees before he plants them, because there is many a time you get a borer in a nursery row. I have often taken them out of the trees I had from the nursery, and taken them out before I planted them. Those of us who hunt them regularly generally hunt them out with a knife or a wire, and any time during the year; but the best time to do it would be once in the early spring before the larva matured, and the next late in the fall. I believe we get very much better results if we practice the application of some washes. A year ago last spring I tried three different kinds of paper—tar paper, bunches of wrapping paper, and ordinary newspaper, and also heaping up air-slacked lime around the trees and Bordeaux mixture, with half the amount of lime and half the amount of

copper; the wash of Prof. Saunders, that is, a saturated solution of soda; and I also tried hydraulic cement and skimmed milk mixed together, and hydraulic cement and water; also the wash they used up in Mr. McNeill's district of ashes and lime. After hunting the trees, I put all these washes on before July 15th, and then observed the condition of the washes and of the wrapping in different periods during the season to see how long they lasted and the effect they had, and we came to the conclusion that as far as wrappings went, the cheapest and most satisfactory one was the ordinary newspaper wrapping, that is, just taking one ordinary newspaper to a tree and wrapping it up the tree, unwinding it when the tree begins to swell, so that you will not girdle your tree. We do not get any borers unless the moth gets past the newspaper. It is an effectual stop, and will stay on for more than two months. Of course it will not cover the whole period. None of the washes stayed on during the whole season with the exception of the two cement washes. Prof. Smith, of New Jersey, told me about both of them. The cement and water was just mixed up into a good thick paste and put on with a whitewash brush about twelve inches from the foot of the tree. About the middle of August the cement was just about as good as if it was put on in July. By the end of August that one had very considerably cracked. Skim milk and cement seem to make it more adhesive, and in September that wash was as good as it was when put on in July. It is easily put on, and especially on the young trees where the bark was not rough it was perfectly successful. I only found two borers on the trees after putting the cement and skim milk on, and they were in little spots, rough places where the cement had failed to cover. I would strongly advise everybody to try that particular wash—just the hydraulic cement and skimmed milk mixed up into thick paste and put on before that date.

E. MORDEN (Niagara Falls): What about earthing up in the late summer?

Mr. BURRELL: I would earth up earlier than that—just after I hunted. If I were putting on a wash I would examine my trees during May or June, and then I would put the earth after I examined early, and then the moths would have to lay above that point where the earth was. I would do it before July.

Mr. ARMSTRONG: As an old peach grower, the wash indicated by Mr. Burrell, particularly that one described as hydraulic cement mixture, has a tendency to harden the new bark and hinder the sap coming up, especially in the young trees. I would not recommend it, and the coal tar has another effect which is very injurious to the growing trees, especially the young trees. I find the best wash I can get is simply the soft soap wash. It not only protects the trees from the insects but it assists in cleaning and clearing the bark.

Mr. BURRELL: I cannot say I have observed any injury in that way. I took note of all the washes I applied, and the Bordeaux and this lime and ashes and the cement were all about in the same condition; that is, they were smoother and shinier and in better shape. I put cement on two years running, not a very thick coat, and noticed to see if it would hurt. The peach trees were four years old. I saw no particular injury.

The PRESIDENT: Mr. Armstrong, you said you found coal tar was injurious to the tree. In what way? What is your experience?

Mr. ARMSTRONG: I have found that during the growing season the coal tar hardens the bark. I got it in St. Catharines fifteen or sixteen years ago, and I discarded it after a trial or two. I have found under the bark, instead of being thrifty and green and sappy it had a tendency to darken and stiffen the bark.

Mr. BURRELL: The cement is more or less porous; the tar would not be as porous.

The PRESIDENT: Was it a light coating, or was it put on pretty heavy?

Mr. ARMSTRONG: It was in July I think I put it on. I put it on lightly with a whitewash brush.

Mr. ORR: I have been using a mixture of lime and hardwood ashes. Last year, after careful searching, we found six borers out of 400 acres; this year we found five. The trees were in almost perfect condition.

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Mr. PATTISON (Grimsby): I have been in the habit of using a composition of ordinary washing soda and soft soap which acted fairly well. It has the fault of not staying on as long as one might wish, but for a considerable period it acts very well.

Mr. BURRELL: What soil is yours, Mr. Orr?

Mr. ORR: Sandy.

Mr. BURRELL: Were you ever troubled much with borers before?

Mr. ORR: This is a young orchard. In the old orchard we were very badly troubled with them.

Mr. BURRELL: The satisfactory report may be because there were not very many borers about.

Mr. ORR: We mixed it with skim milk. Besides that, slacking the lime with hot water makes it more adhesive.

Mr. GREGORY (St. Catharines): Would you recommend laying bare the roots?

Mr. ORR: No; we get the collar entirely clean and then whitewash the limbs right down to the roots.

C. M. HONSBURGER: The old adage "An ounce of prevention is worth a pound of cure," is a good one. I would like to ask Mr. Burrell what mode he would adopt in finding borers in young trees?

Mr. BURRELL: You can only get at them by picking them out with a knife.

GREETINGS FROM SISTER SOCIETIES.

The PRESIDENT: We have to-day a representative from the Quebec Horticultural Society, and I am sure every one in this room will hear him with the greatest of pleasure. We can always learn from those engaged in horticulture from other districts, and we take it very kindly that the Quebec Society has thought fit to send us a delegate, and I may say that in return, at the meeting of the Board last evening, representatives were appointed to attend the meeting of the Quebec Horticultural Society, and also horticultural societies in the States and at other points. I will now call upon Mr. Brodie, representing the Quebec Horticultural Society.

Mr. BRODIE: I have great pleasure in meeting you here this afternoon, and I greatly regret that my confrere, Mr. Shepherd, did not come along with me, as he is a much better speaker than I am. The first Horticultural Society in Quebec was started at Abbotsford, the home of the late Charles Gibb. Abbotsford in Scotland is connected with the name of Sir Walter Scott; here, in Canada, Abbotsford will always be connected with a name just as dear to us, that of Charles Gibb. (Applause.) Our Society comprises French Canadians as well as English speaking people, and it would do you good to see how well we get on together. There is no rivalry; everything is carried on, although sometimes there is a little delay in translation and so on; still we get on very harmoniously. I find that being able to speak both languages is a real blessing, so if you delegates come down to Quebec I hope you will not be disappointed if you hear a little of our discussions in the French language. We have had a great deal of difficulty in contending with severe winters. The winter of 1895-96 was most disastrous to us in our fruit work. Whole sections of plum orchards in the L'Islet and Kamarouska were destroyed with the exception of a few trees, and in my own orchard near Montreal I lost between 50 and 60 valuable trees. I noticed coming up here how clean you have your orchards. Well, we have to let the grass grow to be a protection to our orchards. Another reason why I like to have a good coating of grass under my trees in an autumn like this is that the apples ripen up very rapidly, and I had about 300 barrels of windfalls. We had a very wet October. If we had to pick up these windfalls out of the mud we would have realized a pretty small price for them, while for those we did gather I got from \$1.70 to \$1.90 a barrel in the Quebec market. That is one reason why I

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think what would suit your country up here would not suit ours at all down in the St. Lawrence Valley. Perhaps one reason is we have a greater rainfall down there; we are not subject to such great drouths as you have here. I believe in manure, and if we cannot get manure, we get wood ashes or fertilizer. I am fortunate in being able to get manure hauled on my place for ten cents a load. I can put a whole cartload on each tree, and in that way am able to grow fairly good apples. The secret of all is to spray the trees. I was surprised at the Ottawa Exhibition to see so many apples from the Ontario districts spotted and stung with codling moth. Had it been in the Province of Quebec, where we are not kings in horticulture like you are up here, I would not have been so surprised, but I found out from those exhibitors there they did not believe in spraying. Well, if they had only been at my orchard this year I think they would have gone home convinced, for my neighbor's trees had hardly a decent apple on, and they shook off the few they had, while I had 1500 barrels out of my orchard. I hope those who come to Montreal will not be disappointed, because we cannot get a gathering like you have here of representative horticulturists, but we will do the best we can to make it pleasant for you. (Applause.)

Mr. CARPENTER: As a Horticultural Society we are progressing rapidly. Two years ago we started with seventeen members, and now we have seventy four. We have been spraying more extensively in our section this year, and somehow we don't seem to see much difference between those that are sprayed and those that are not sprayed. My own crop would be about half culls. Others show very good results from spraying.

C. W. BUNTING being called on said: I am one of the officers of the Niagara Fruit Growers' Association. Our President and Secretary are unavoidably absent to-day, but on behalf of that Association I have great pleasure in welcoming to this peninsula the Ontario Fruit Growers' Association, and I trust your visit in this place will be productive of pleasant and profitable results to all the members who have made it convenient to attend; and I am sure I but echo the sentiments of the Fruit Growers of this section in welcoming you here.

Mr. MORDEN: We have in Niagara Falls a system of spraying on a gigantic scale nowhere else seen on the face of the earth—we have the Falls of Niagara. The fruit growers emulate that system in spraying, but I cannot report very much in that direction, though I am satisfied that the future fruit grower will do more spraying. We are getting on fairly successful. We have had a good membership and no doubt some good has come from our Society there. When you go to the Falls in the summer I hope you will come out and see us, and we will take you all through our fruit plantations, and let you look at this beautiful fruit. (Pointing to the display of fruit on the table, amid applause.)

The PRESIDENT read a letter from Mr. Walter Ross directed to Mr. Boulter, our Director in Prince Edward County, from one of our valued societies, in which he speaks most highly of the satisfaction given by the Canadian Horticulturist, and the good success of their work at Picton.

EXPORT OF FRUIT PULP.

Mr. J. C. James, Deputy Minister of Agriculture for Ontario, then read to the meeting a series of letters on the export of fruit pulp, from Mr. Harrison Watson, Curator of the Canadian Section of the Imperial Institute. These letters have already been published and distributed and need not be reprinted here. Copies may be had by applying to the Department at Toronto. A lengthy discussion took place of which the following may be given here:

Prof. ROBERTSON: I had the pleasure last summer of seeing Mr. Harrison Watson and several large importers of fruit pulp in Britain. I found there is a demand usually for raspberry pulp and apricot pulp only. The others are a very small trade and an

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Gentlemen:
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uncertain demand. The very top prices are about £40 per ton, rarely £42, usually from £18 to £26. Now, these prices would nett in Canada not more than 5 cents per pound for the raw fruit at the very best, down to almost nothing when the pulp sells for £18 a ton; so if the fresh fruit can be sold at all at anything like the common prices then it would not pay to turn it into pulp for export. But sometimes there is a surplus of fresh fruit that is unsalable either from very small size or poor quality, and that might make a fair quantity of pulp; but at £40 per ton the 8½ cents per pound there would not nett more than five cents per pound for the green fruit after taking off the cost of the package, the cost of the fruit, the commission and allowing 10% for shrinkage for the evaporation of the fruit during the preserving process. When it gets down to £20 per ton, the cost of the package, freight, commission and shrinkage reduces the account sales into a cipher for the man who ships; so that in the normal conditions of the market there is not a cent a pound for our green fruit, and in the abnormal conditions which have existed the last few years it would not be five cents a pound for the raspberries and the apricots. If any of the fruit growers are anxious to try this business and will furnish the pulp, our Department will take charge of the shipment of such pulp and see that they are put in the best markets of England, and give full returns for the fruit before the trial is made. I am not hopeful that any large trade will grow up for that stuff from Canada, since we have such a good market now for those two classes of fruit which are wanted in the form of fruit pulp.

MR. BOULTER (Picton): At £40 per ton it would not realize quite as much as Prof. Robertson stated, that is, taking out ordinary charges. However, later on I will be able to ship pulp, and if any members of the Association have large plantations of raspberries that are any way convenient to Toronto it could be got very cheaply. I intend to give this a thorough test the coming season. My theory is that unless a grower can get at least four or five cents a pound for his raspberries in their natural state there is not a great deal of money in it; and unless it could nett that to the grower—which we have always failed to do in our county—I would not advise a person going into it unless he were skilled in putting it up. It costs considerable to get it up. It is a good idea that that invitation came, because for the last two years raspberries have been a drug in Ontario, and they have not been selling as they should have, for what reason I do not know. There is a variety of raspberry that might be cultivated for pulp—the Shaffer. It is an enormous bearer, much better producer than the Outhbert, but inferior in quality, and it will not do for our business in Canada in what is called preserving, being too soft and going to pulp. Outhberts will stand up under the cooking necessary to be done. Possibly as they could be grown for one to two cents a quart less than Outhberts, and a success might be made of them. I have sent some of them over to see if they would do as well as the Outhberts have. In the prices quoted, you must remember that a ton is a long ton, not 2000 pounds, but 2240, which cuts quite a hole in the amount you expect to receive. My own opinion at present would be that there is nothing in the pulp business except for raspberries. Do not attempt anything else. Do not attempt strawberries. This pulp is an experiment yet, but I intend to send over quite a lot next year if the crops are good.

COMMITTEE. Messrs. W. Boulter, of Picton, A. McNair, of Walkerville, and Rev. W. J. Andrews, of Grimsby, were appointed a committee to investigate the subject and make arrangements for some trial shipments.

Canners and others interested are requested to correspond with this committee.

PROSPECTS FOR EXPORT OF TENDER FRUIT.

PROF. J. W. ROBERTSON, Commissioner of Agriculture, said: Mr. President and Gentlemen: Before I say much for the prospects for an export demand for tender fruits I would like to make a few observations on the present status of the business of growing

tender fruits in Canada. In thinking over why many people went into fruit growing, one is soon led to the conclusion that the general fall in the prices of cereals a while ago made many give up grain farming, in which they had had experience, and for which they had natural fitness, and go into fruit growing, without either the special knowledge or personal aptitude for making a success of that business. Great areas of Canada are devoted to fruit growing for that reason. When the ordinary operations of farming did not pay well, there was general discussion as to whether fruit growing would not pay better. There was a great deal of information of the most indefinite kind diffused over the Province in regard to the benefits and advantages and profits of fruit growing, and the consequent agitation led a great many men into that business. That was a good thing for agriculture and a good thing for those men, because for a while the fruit growing business paid very well—much better than the land which was devoted to it had paid the occupiers through ordinary farm work.

GLUTTED MARKETS. That leads one in looking over the fruit growing business, particularly in Ontario, to examine into the kind of fruit that these people have been growing and why they grow the kinds they do grow. Most of the men have planted the kinds that can be grown easiest, with least risk, and that yield largely without regard to whether there would be a permanent or large enough demand for that class of fruit. In addition to growing the kinds that I have alluded to, they have grown a great many kinds, and still grow them just because they have some *interesting* characteristics, and because the cuts of them look well in some nice book or catalogue. Just go over a fruit farm and find the kinds that are growing and why they are being grown, and while my statements are rather unpalatable, they are quite true in regard to most farms where fruit growing is carried on. That has led to this state of things in Canada, that the Canadian fruit growers are growing more tender fruits than their home markets take care of. I do not say that they are growing more tender fruits than the people of Canada can and would readily consume if they got the kinds they want in the condition they like them, because we import more tender fruit from California than would fill the pockets of a great many Ontario fruit growers with all the profits they could expect from their business. The markets are glutted not because the Canadian appetite is satisfied with Canadian fruit, but because Canadian fruits have not been of the sort or put up in the way that the Canadian consumer wants; and if not suitable for the Canadian, how much less for the ten times more fastidious Englishman? I want to have you think of that before I speak of the prospects for an export trade in tender fruits.

If one grows a great many varieties of any sort of fruit, his only chance to make any money is by having what I will call a particular personal market. The grower can go direct to the home eater and meet his needs. But if a man has to put his products on an open market of this country or Britain, or the general market, then he must not have a whole promiscuous assortment of fruit, but he must have a few definite varieties that they like. Otherwise he cannot make it pay. In promiscuous growing he does not grow any variety on a large enough scale to have his expenses low enough, and he does not have enough quantity of any one kind to attract attention in a good market. Confirmation of my judgment on this subject from the bulletin just published by Prof. Bailey of Cornell University that came to my hands even after I had my subject thought out for this meeting. He makes this very clear in his bulletin, that the kind of fruit-growing which a man may follow with profit, for the personal market where he supplies the fruit to the homes in his locality, is quite different from the kind of fruit-growing a man may follow who puts his fruit on the open general market.

That being so, if we have in Canada now considerably more tender fruits than our own markets will take care of, can we find an outlet abroad at profitable prices for these varieties of fruit? That is the problem; and I will tell you a little of our experience. A man who follows fruit-growing for his home market will find customers who pay special prices for special quality, but the man who grows fruit for a general market can get only the current prices for ordinary good quality. The two markets are quite different in regard to returns the grower may get. More than that; the man who grows fruit for

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the home market may carry on the work on a small fruit farm, put a good deal of expenditure into the carrying on of his business, and get paid for that by the specially high prices that people will pay for just the particular things they want; whereas if a man throws his stuff on the general open market he has to take the price which the man who grows fruit on a large scale with the least possible expense is willing to take. If we are to have an export trade for the finer fruits we will have to confine ourselves to a few staples in the fruit foods and get these produced of the best quality and at the lowest cost to ourselves.

DEMAND. That brings me to the inquiry, "Is there any demand in Great Britain?" which I take to be the market for which we are catering, when we speak of an export demand. Of pears, Britain usually imports about a million dollars' worth a year; sometimes more, sometimes less; of plums about a million and a quarter dollars' worth a year; and of grapes about two and a quarter million dollars worth a year from various countries. I have not mentioned apples because they do not come under the heading of tender fruits. The British market does consume an enormous quantity of tender fruits. The market is only opened for them. It is not by any means developed and supplied. In the past the price of pears has been so high that the demand has not been one-tenth of what it may be and will be if Canadians put their pears on the British market as abundantly as they put their apples on the British market. There is a tremendous demand and market there for high-grade pears, because pears enter into the food of the people, through cooking and in many ways. That is an important consideration when you try to estimate the capacity of the market. On the contrary, grapes are always and only a dessert fruit—not a food fruit; and for them the demand is consequently limited, and also more fastidious, because in a dessert fruit people want something particularly pleasing to their eye and palate. They cannot mask the flavor by cooking or in any other way.

SOME ESSENTIALS TO SUCCESS. Then can an export trade in tender fruits be made a success of from Canada? I suppose twenty times a month men write me problems "Will it pay me to do so-and-so?" Anyone who has done work of investigation can say whether a certain principle is applicable or not, or whether a certain statement is true in regard to it coinciding with principles; but no man can say of a business proposal, "That will be successful," or, "That will not be successful." Success depends on the personality of the man and not on the nature of the business. I do not know whether exporting tender fruits can be made a success except as I learn the kind of men who take it up. There are principles and there are reasons, and as far as a man understands those and applies them he can make it a success; but the success depends on the person and not on the opportunity, because the opportunity may have existed for twenty years, but so far the person has not risen to make success out of the opportunity. It may have been for want of information, it may have been for want of transportation conveniences, it may have been for want of cold storage in the ships; still that is the state of things to-day. Can they be altered from this time on?

QUALITIES WHICH DETERMINE VALUE. The person who undertakes the shipping of fruit to Britain must know the conditions that the British consumer and importer impose on him. I have learned by experience that the British consumer and importer does not care a snap of his fingers for the fancy names of the specially esteemed kinds of fruit. He does not care a brown bawbee if it has been cracked up by every specialist in the country. Soundness is the first consideration, then keeping qualities, then nice appearance in regard to color, size and shape, and lastly he looks for as nice flavor as you can give him. The latter is not a matter of the first importance at first in the commerce of this business. Soundness, keeping qualities, appearance, and then flavor, is the order. Too often the fruit-grower reverses that order and says, "Oh, but such a kind of fruit is the most delicious and high-flavored." It may be, and may pay to grow for the personal, particular market of the man who is going to pay a high price for special intrinsic quality; but the British market will pay just the common price in the order of those qualities. I want to repeat that over and over again; it is the secret of the whole situation, soundness and keeping qualities after the fruits are there, then nice appearance, and then a flavor as good as you can get.

When trial shipments were made by the Department of Agriculture at Ottawa in 1898, we found those things that we had learned in 1897 were still further emphasized. In 1897 the Department took charge of 7,141 packages of tender fruits and sent them to Great Britain. In 1898 the Department took charge of 3,815 packages of tender fruits. We sent in 1897 about $3\frac{1}{2}$ times more than in 1898. The less quantity was not because the Department was less willing to take the fruits and test them in the British market, but because for various reasons, mainly climatic, the shippers in the Grimsby district were not able this year to provide as much fruit as they expected, or as the Department wanted to carry on its trial shipments. The fruits shipped were practically the promiscuous gatherings from various farms. That was unfortunate. The arrangement with the shippers was that the Department guaranteed a certain price at the shipping point, and if there was a revenue above that, that also went to the shippers. The kind of package that was used was a comparatively small package, measuring inside 22 inches by $11\frac{1}{4}$ by from 4 to 6 inches deep according to the size of the fruit. The packages were light; they were open for ventilation and for cooling the fruit; and they had an attractive appearance, and also the good quality of being reasonably cheap, costing about six cents apiece. They held all the way from 24 to 30 lbs. of fruit according to the size of the individual fruits. Each separate fruit was wrapped in tissue paper, and the packages were filled from the side so as to cause the least surface to be faced.

RIPENESS. The condition of ripeness desired when the fruit was picked was that the pears should be of full size and quite green and firm. The California pears that go to England are sold particularly well because the receivers there say they can keep them for two weeks after they get them. Observe!—soundness, keeping quality. Anybody in Canada knows that a Bartlett is a joy to eat compared with a tough old tasteless pear from California—(laughter)—still, the pears from California would fetch nine shillings a case whereas our best would fetch only six shillings because the California pears would keep, and the man who bought them did not fear losing them next morning. The same was true in regard to the condition in which it was desired to have peaches picked; but it is exceedingly difficult in practice to tell when a peach is at the right stage of ripeness. I do not know any means of determining that, and I have not found any fruit-grower who can. I went through the orchards in Grimsby and elsewhere and I found they told by the appearance of the peaches and then by "the feel" of them. They were quite often disappointed that way. A peach will ripen a great deal in half a day if the weather is hot; and it is practically useless to pick peaches at the same condition of ripeness as can be observed in the picking of pears.

After the fruit was packed in the cases it was cooled down in the cold storage room at Grimsby to between a temperature of 36° and 40° Fahr. The cold storage could be easily held at these temperatures, and as the packages were small the fruit was cooled to the core to about 38° Fahr. at the time it was put in the railway car. The Railway Company furnished refrigerator cars. They went forward to Montreal without loss of time, and the fruit was delivered on the steamships in very good condition, with this exception to that remark: that quantities of the tomatoes and some of the peaches were considerably too ripe before they were put into the cold storage at Grimsby. A low temperature does not seem to have the same power to arrest the ripening of tomatoes as it does to retard the ripening of pears. I had pears put into cold storage at Ottawa; and two months after they were put in they were perfectly sound, firm and hard. Tomatoes put in under the same condition became too ripe in ten days' time at a temperature of 36° and 38° Fahr.

PEARS. The quantity of pears sent over was 2,208 cases. The cases were not weighed, but were estimated to hold about one basket and a quarter, and they held from 26 pounds to 28 pounds—I think I found one weighing 30 pounds of fruit, which was quite exceptional. Taking the prices at which the several lots were sold and averaging them these pears realized on the average 73.6 cents per case at Grimsby after the freight charges and all expenses were taken off. The shippers would realize 67 cents for that quantity of pears after allowing for the cost of the package. Now I think that is a very good price. I do not know whether you fruit growers would be satisfied or not with that price for pears—(Voices, "Yes, yes")—but that was a fair price, and includes two shipments when the

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British market was said to be dull and glutted for pears. Now, all pears are not alike in the British market; the buyers won't pay the same price for all pears; and the nett returns at Grimsby showed a much greater difference than the selling prices in Great Britain, because you have the very same freight charges, and the very same insurance and other charges to take off the low-priced pears in England, as off the high-priced pears. The first shipment of pears that went over realized all the way from one dollar a case at Grimsby to forty six (46) cents a case at Grimsby; that is, one portion of the same shipment fetched a dollar and the other portion forty-two (42) cents. I took the average of all the highest prices at which the pears in each shipment were sold, and then the average of all the lowest prices. In the second shipment they netted from sixty-three (63) to fifty-five (55) cents per case; the third shipment from ninety-six (96) to seventy-six (76) cents per case at Grimsby. The smaller sized pears fetched the lower prices I have mentioned. This year, these pears were not creditable to Canada. I am not imputing any blame to the shippers at Grimsby beyond saying that the pears this year were small, and not creditable to Canada as showing what we can do usually. The weather was unfavorable during part of the season, even to the extent that some shippers were not able to send pears at all after the first shipment. If we could send forward the best quality of Bartlett pears we would have an enormous market, I am sure, because the people like them so well there is an almost unlimited demand under ordinary conditions at the prices I have mentioned. The very best prices that were gotten for any considerable quantity were six shillings and threepence (6s. 3d.) a case in England for these small cases. That would nett at Grimsby one dollar and twelve cents (\$1.12) cents a case containing from 26 to 30 lbs. The difference in price between the varieties was hardly noticeable. In one case the Duchess fetched from four shillings and sixpence (4s. 6d.) to four shillings (4s.); and in another case the Keiffers fetched from four shillings (4s.) to three shillings and sixpence (3s. 6d.).

The English market likes not a monster pear, but a large pear, or rather a large medium size; about 70 pears to the case weighing 28 pounds were a fine size. They would weigh about three to the pound. Those would be pears of first-rate size.

PEACHES. I want to deal next with the matter of peaches. We sent altogether 324 cases of peaches. For one small shipment we realized one dollar and fifty cents (\$1.50) a case nett at Grimsby, and for a great many other shipments we realized 32½ cents less than nothing at Grimsby. That was a loss of the total expense of carrying them to England, because they sold for nothing there, in fact were condemned by the health inspectors. They were carried in the same refrigerator car, in the same part of the ship, and at the same temperature as our pears which fetched those prices I have mentioned. Those were mainly the Bartlett and other tender pears. It was not that the cold storage was not sufficient; it was that the Crawford peaches sent from Canada had not the qualities in them to let them be in good keeping condition in the English climate 20 days after they left Grimsby by any system of cold storage we have yet devised. A few peaches each time were excellent, and a few peaches each time were rotten, and a number of peaches each time were pithy, dry and tasteless. There comes the difficulty of making a commercial success of shipping peaches. If they are picked just the least little bit too green they have almost no flavor and are not mellow when they come out of the cold storage. If they are just right they stay right; but if they are a little too ripe they go to soft rottenness on the other side the day after they come out of cold storage. In some cases where the peaches were sold for good prices the purchasers brought them back next day and demanded their money back saying they would get the health officer to condemn the peaches unless they were settled with at once. There is the difficulty: unless you have some means of determining just when the peaches are sufficiently ripe, and not too ripe, you would have so many losses that they would take away all the profit from those that were in good condition.

Mr. BURELL: Did you see anything of the African peaches, the Cape peach, because I was told by friends in England that they had arrived in very good condition and realized splendid prices.

Prof. ROBERTSON: The Californian peaches also arrived in good condition and realized good prices. I did not see the African peaches myself. They come in after our spring is about begun, but the Californian peaches arrived in some cases in excellent condition, because they have toughness of flesh, and the shippers seem to have a better means of getting a large quantity in the right condition of ripeness.

TOMATOES. Of tomatoes we sent 428 cases. Most of them, I think, were a little too ripe at Grimsby. One or two of the latter shipments I saw in Montreal were also too ripe in appearance. Here is the difficulty with tomatoes, that they keep on ripening slowly at low temperatures. When the tomatoes were taken from the cold storage in England, they often looked fairly well, but they simply collapsed in two days in most cases. Tomatoes that go into England from outside markets do not go in cold storage; they go on the decks of the ships, where the ventilation is thorough. They are allowed to ripen gradually, and they do ripen very well during the period of ten days; but longer than that makes it exceedingly difficult to have them delivered safely. If they were picked green, then cooled at once and gradually warmed to 50, or 60, Fahr. before they were exposed to the air in England, they might fetch a good price, but the price they would fetch would hardly tempt anyone to lay himself out to grow tomatoes in Canada for the English market. A few cases realized thirty-seven (37) cents at Grimsby, a few thirty six (36) cents, and nearly all the rest were failures to the extent of realizing nothing and causing loss to the extent of the freight paid on them. They went in the same cold storage chambers as the pears that we landed in first-rate condition and at the temperature that the Californian shippers keep their fruit at viz., from 38 to 40 degrees, on the way across.

QUINCES. Fourteen cases of quinces realized fifty-nine (59) cents, but I do not know that we have exact information enough in regard to quinces to give any information as to whether they may be carried safely as a rule or not. Some of the 149 cases were landed in good condition and some were not. That seemed to be owing to the condition of the quinces when they were put in the cases at Grimsby.

APPLES. Of apples in those small packages, 254 cases were sent. They realized forty cents at Grimsby, but the reports all said, "Do not send any more apples in such small cases; larger sized cases will pay you very much better." Apples of tender sorts, that cannot be sent at all without cold storage, have been sent to England in the very best of condition through cold storage, and they realized very fair prices. Mr. Brodie of Montreal was telling me this morning of some apples he shipped from Montreal in cold storage that netted him fair prices this year.

Apples like the Duchess, that could not at all be sent to England hitherto, can be sent in excellent condition in cold storage if they are properly packed; but a discussion of that will come under the head of Transatlantic Transportation.

Mr. BRODIE: This shipment of mine was sent direct to London. It was 20 days from Montreal to London. That was a long voyage to remain in cold storage.

Prof. ROBERTSON: What did they realize at Montreal?

Mr. BRODIE: About \$2.25 a barrel; but the dock charges were something tremendous; also cartage 15 shillings on 30 barrels of apples from the London dock to Covent Garden Market—about 12½ cents a barrel. For 2½ cents we can get apples carted from one end of the city to the other in Montreal.

Prof. ROBERTSON: I think anyone who has large experience in consigning small shipments to England will agree with Mr. Boulter, that the English commission merchant has wonderful facility and thoroughness in devising new items of expenses that he can add to account sales and in making a long, long list of charges.

GRAPES. I have a few observations to offer on the trial shipments of Grapes. There were 441 cases forwarded. Twenty packages that were sent to Glasgow realized seventy (70) cents at Grimsby for about 18 pounds to the case; twenty-five packages realized (41) cents per case, sixty-two packages realized nineteen cents (19) cents per case; but the other grapes did not fetch anything at all worth mentioning.

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Mr. PATTISON : With the grapes that were successful, was it a matter of varieties or of condition that they arrived in ?

Prof. ROBERTSON : It was a question of the market they happened to strike. The grapes that were sent to Bristol were landed in first-class condition ; there was no fault to find, but simply the people did not like the flavor and would not pay a price. Grapes from other countries were so low in price that they would not take any risks with the new thing.

EXTRACTS FROM LETTERS.

Pears. In the matter of pears, the first extract I have to mention is from a letter Oct. 18, by an agent of the Department in Great Britain, who writing about the California pears, says :

"Pears—(and these went by way of Montreal from California by our cool route)—sold from 7s. to 9s. 6d. per case of from 18 to 20 pounds of fruit ; and plums sold from 6s. 6d. to 12s. per case of from 18 to 20 pounds of fruit. The fruit was all in fine condition, having been picked green ; in fact some pears will not be ripe for some weeks, but they sell well for keeping stock.

Seven shillings to nine shillings and sixpence because they had keeping qualities ; the keeping qualities are what they pay for in England in the meantime. That fruit was landed from the ship's cold storage at from 38 to 40 degrees. The next short extract I have in regard to pears is in a letter also from Mr. Grindley, of Oct. 22, in regard to the shipment of fruit in one of the steamships :

"I am glad to say it is turning out in regard to condition much better than the first three consignments. Pears very good, Peaches in very fair condition, some cases still too ripe. Tomatoes sound and still green."

Those were the tomatoes that two days after they were sold collapsed and would not keep after they came out of cold storage.

Then there is a letter of Oct. 4 from the firm of Elder, Dempster & Co., the steamship owners, and also the men who sold the fruit. They have developed an enormous trade for the distribution of fruit in England. They say :

"Pears have made what we consider a good return, and the shipments received since have been in better condition than the first, and we show considerably better results by these." Mr. C. W. VanDuzer's pears very fine, and should advise shipping large quantities to this market.

I happened to see two of these lots of pears that were selected,—about the size and shape and quality to throw on the open market. The next quotation I want to make is from Elder, Dempster & Co., speaking of pears again :

"Packing of pears satisfactory, but we should like them a little greener than they have been. Tomatoes absolutely useless, and we should prefer that this packer sent no more to this market."

MR. MCNEILL : May I enquire whether that Canadian packer had any experience locally in shipping tomatoes ?

Prof. ROBERTSON : I suppose that this man had, because all seem to grow tomatoes and ship them to the local markets in Canada. We find that tomatoes will do very well carried in a ventilated space but do not seem to keep well in cold storage. The tomatoes that we put to the test in Ottawa seem to have gone in the same way. This is from Thomas Russell, a fruit merchant in Glasgow, to whom a shipment was sent :

"The pears sold well, especially as at the time of their arrival our market was in a manner glutted with French pears which were being sold very cheap."

I have this further to say before I leave the pear subject : That you will see from the reports even from the last observation, that the pears from Canada this year did not strike any special catch market. On three different occasions the report was, "The market is rather glutted and dull from large arrivals from the continent."

Mr. PATTISON : Can you tell us anything as to the varieties of pears ?

Prof. ROBERTSON : They do not give us any statements of preference for any particular variety. The reports are for soundness, keeping quality and appearance, and then for variety or flavor after that.

A DELEGATE : Do you know if there were any Kieffers sent ?

Prof. ROBERTSON : Yes, in the last shipment, and they were sold at from 4s. to 3s. 6d. per case of about 28 pounds ; that would bring from 59 to 47 cents nett at Grimsby, and that was at the time when the price was lowest in England.

Mr. SMITH : Are we to understand there is no preference for any variety of pear ?

Prof. ROBERTSON : The Kieffers were sold for within twelve cents a case as much as the Duchess. So far as our testing of the English market goes, the price paid is according to the soundness, the keeping quality and the appearance, and then the flavor is considered. California pears were sold at much higher prices than even our Bartletts, because they had keeping qualities. The flavor and other eating qualities must be fair.

The SECRETARY : Last year one shipper who received a case of Keiffer pears in Great Britain said that he did not care to buy a second box.

Mr. BRODIE : Do they use that Kieffer pear for table decoration or for use ? (Laughter.)

Prof. ROBERTSON : I am unable to say that. Some kinds must be used for table decoration, but that is not the kind that should be sent. While soundness and keeping qualities and appearance are things wanted now, in the course of a few years they will begin to discriminate, and if we have given them good pears with fair keeping qualities all along we will have the first place in the market. In the meantime their money is paid only for the fruit having soundness and keeping qualities ; so let us get our fruit there in that condition, and of the best flavor and flesh we can. We will then have the preference in the market in the long run when the keener competition comes.

Peaches. The following are a few extracts from letters in regard to Peaches :

"Peaches turned out six over ripe in eleven cases and 40 cases are now in Elder, Dempster & Co.'s back yard completely rotten."

These went in cold storage at from 36 to 38 degrees. The second says :

"Peaches already shipped have the appearance of having been chilled, besides, on being exposed to warm temperature, they gather moisture which hastens decay—some of the paper wrappings being quite wet."

That is, from being very cold, moisture from the English atmosphere was condensed on them ; and that hastened their decay. The next quotation on that matter is in a letter from Elder, Dempster & Co., of 4th October. They say :

"Peaches.—We would advise you to stop shipments of these as they will cost senders more money than shipments of them. Your Mr. Grindley has seen these goods, and, we understand, he is advising you to stop"

Then on October 24 the same firm writes :

"Peaches realized much better prices than we anticipated, but since selling these by auction we have received numerous complaints with enquiries for money to be returned. They arrived here in a condition which we are unable to put into words, namely : Dry. They being absolutely useless for dessert fruit. We should advise this packer not to ship any more of these in cold storage, and if you can pack in smaller packages, containing about two dozen peaches, wrapped in wool, and picked green, so that they can ripen on the voyage, we are sure you should make a good market here."

That would seem to indicate that they would like trial shipments, not in cold storage but in ventilated space. The peaches I put in cold storage kept all right, but those that we put in green became dry and almost quite tasteless. The difficulty is to get the peaches just at the right condition of ripeness for shipment.

Plums. Then there is a remark about Plums :

"Plums were in very bad condition, they being picked when a little too ripe. Apples in good condition, but packages are too small to pay for voyage."

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Grapes. The quotations I have next are about Grapes.

From Mr. Grindley, Oct. 7 :

"I have cabled and written to you several times regarding the unsatisfactory condition in which the peaches and tomatoes are reaching here, and should advise the stoppage altogether of consignments of both peaches and tomatoes, and I might also add grapes, for although they arrive in fair condition, there is no demand for them owing to the flavor."

Then on October 18 :

"I noticed in Bristol one large fruit dealer was selling our grapes (card in window) as 'Choice California.' They told me nobody wanted 'Canadian Grapes,' but they sold some as Californians."

I am giving you the facts without being able to account for all the mysteries of English commerce and of the English palate. The varieties shipped were mostly Rogers Red, Rogers Black, Lindley and Niagara ; and I think only a few Concords. I think the bulk of them were Rogers Red and Rogers Black. I think the grapes this year were representative of the best grapes in the Niagara Peninsula at the time the shipments were made.

Mr. GREGORY : Have you a statement of what the grapes sold for per pound ?

Prof. ROBERTSON : Most of them fetched no price at all ; they were nearly all given away. The four shipments from Mr. Linus Woolverton illustrate the rest. In the first shipment of grapes there were sent ten cases which netted twenty-three (23.9) cents a case at Grimsby ; that would be about sixty (60) cents over there. The next netted 19½ at Grimsby ; the next lot were a complete loss ; and also the fourth a complete loss, leaving the freight and other expenses to be paid on the last two shipments, in addition to the loss of the fruit and the packages.

Mr. GREGORY : Was that in the same market ?

Prof. ROBERTSON : The same market. After the first two shipments, they would not buy them. There was not any complaint as to the condition of the grapes. They were not mildewed or soft or out of condition by falling off the stems.

The next extract in regard to grapes is from Glasgow, in which the salesman says :

"Grapes--The demand for these were very slow on account of the peculiar flavor which they have and which is not relished as yet by our countrymen."

In these cases the grapes were Wilder, Agawam, Lindley and Niagara. They were sold all the way from five shillings and eightpence per case, the highest--(that is, \$1.36 per case over there)--down to eightpence per case (that is 16 cents per case over there). There were a few Wilder grapes sold for four shillings and eightpence--(that is \$1.12 over there). That would realize about 72 cents at Grimsby. Nine cases of Agawams were sold for three shillings and eightpence ; Lindleys for two shillings and one shilling and threepence. Twenty-eight other cases of Lindleys were sold for four shillings and fourpence. Niagara grapes were sold for from two shillings down to eightpence per case. Thirteen boxes of Red Rogers were sold for four shillings and eightpence, and seven boxes of Black Rogers were sold for five shillings and eightpence. These were all sold in Glasgow. The grapes which were sent to Bristol in the last two shipments were simply given away.

Tomatoes. Another extract from Elder, Dempster & Co.'s letter :

"As we have previously told you the grapes and tomatoes are useless to us, and we are bound to claim from you any money which may be due for freight on them."

The next letter is from Mr. Grindley, the agent of the Department, dated November 10, in which he says :

"I examined tomatoes from Canary Islands packed in peat dust, and brought here as deck-loads, and they were in perfect condition."

That is where England gets most of its tomatoes from abroad. Then from the fruit salesman October 4.

"We are not satisfied by your putting these goods in cold storage, as the low temperature is detrimental to the shipment, especially for peaches and tomatoes."

"Tomatoes--These have deteriorated considerably, as have peaches, owing to their being in cold storage, and we have had continual complaint from our customers of them. When they have been placed

on show they melt into water, and 24 hours after being bought they are in a useless condition, and we have been compelled in many cases to return the money that was made at sale."

Then from Glasgow there comes the report :

"Tomatoes—There was no great demand for these on account of the cold weather, and the plentiful supply of local grown fruit."

Now, Mr. Chairman, I have come to the end of the extracts, and also to the end of my remarks, except these few things I have to say in conclusion. I think the prospect for a profitable trade in the exportation of Canadian pears is very good. We have the conditions for producing abundantly this class of fruit which the British public are both able and willing to pay good prices for.

A DELEGATE : How would quinces be ?

PROF. ROBERTSON : So far we find them sometimes being sold well and sometimes being given away.

MR. PATTISON : Is there any prospect of putting plums on that market in good shape ?

PROF. ROBERTSON : I think little prospect of making them pay well, because of the suitability of their own climate for growing them in most years. I think we might have a "snap market" occasionally.

A DELEGATE : What is the method of cold storage ?

PROF. ROBERTSON : Mechanical refrigeration by the use of ammonia to a temperature of 36 to 40 Fahr.

PROF. MILLS : Do California apples, tomatoes, plums and peaches reach there in good shape ?

PROF. ROBERTSON : Their main trade has been in pears, and they were at it four or five years before they made a success of it. This year they have added peaches. They had failures for two years, the shippers were said to have lost \$200,000 in one year. After they had learned to pack and carry pears successfully they have gone into the peach business, and apparently are making a success of that.

PROF. MILLS : Have they done anything with tomatoes and grapes ?

PROF. ROBERTSON : I think not with tomatoes. They have with grapes ; their grapes have thick skins and tough flesh.

A DELEGATE : Did you send any Sultana plums ?

PROF. ROBERTSON : No, and as far as I could learn on the spot from talking with merchants, the English grown plum is usually sufficient for their own needs at fair prices, and we have not any chance of getting a demand for our plums at a profit.

With regard to peaches it does not seem to me that we can expect a profitable trade in exporting peaches from Canada to Great Britain by means of cold storage, nor can we expect a profitable trade at all in sending over Crawford peaches from Canada to England. The fruit is so tender that unless picked at a particular hour of the day, when its development is just right, there would be a risk of loss so great that no commercial man would take up the venture on a large scale.

With regard to tomatoes the position is still doubtful, but the increased production in the south of England and the Canary Islands is putting the price down there so low that counting our extra expense and our extra risk I am not hopeful we will have a trade in tomatoes. Even if they could be carried safely it is doubtful if we could make it pay as against these other competitors.

I do not think we need look for trade of large volume in grapes.

A DELEGATE : Could you give us the month in which the peaches were shipped.

PROF. ROBERTSON : I think the first shipment of fruit went out on the 7th September.

A DELEGATE : Do you know if any Smock peaches were shipped ?

THE SECRETARY : There were a few.

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PROF. ROBERTSON: An effort was made through Mr. Woolverton's own enterprise in sending thirty cases of grapes to one of the jam-makers, and he reported that they were entirely useless for his purposes.

In the case of the more tender sorts of apples I think a very large trade can be developed, and only developed by shipping them in cold storage.

GENERAL CONCLUSIONS.

My conclusions so far as they can be stated with any satisfaction to myself with some sense of the responsibility under which I say them, is that Canadians may have a continuously growing trade in the exportation of pears; that there is a possibility of getting a trade that may leave a living profit from shipping tomatoes; that there is no likelihood of making a success of sending over Crawford peaches; and that the demand for Canadian grapes does not exist, and it is a question to be considered whether it would pay us to send about one carload a week of our best sorts to further try to create a demand or not. Other tender fruits such as raspberries and currants and things of that kind could only, I think, be sent across profitably in the form of pulp, and that may or may not be profitable just as there is a scarcity or a large crop of these small fruits in Great Britain for the year. If the crop there is large the price goes so low that there will be no profit in sending them over from here.

THE SECRETARY: Why could not Crawford peaches be sent in pulp?

PROF. ROBERTSON: The price of all fruit pulp, except raspberry pulp, is from £18 to £22 per ton. I asked if they could take anything but raspberry pulp, and they said other things would have to create a demand for themselves. At £22 per ton, after taking off the costs of preparing the cost of packages, transportation and commissions, I do not think there would be enough left for the fruit to induce our people to provide it.

MR. GREGORY: What is the charge per ton for transportation and for freight for grapes and pears?

PROF. ROBERTSON: The freights from Grimsby to Montreal are 33 cents per hundred pounds. The freight on the ship is by measurement, usually about twenty shillings per forty cubic feet in cold storage. The total expenses for transportation this year comes to 34 cents per case.

MR. GREGORY: Per case of 28 pound?

PROF. ROBERTSON: Yes; that was the whole expense—transportation and dock dues and everything on the other side excepting the item of commission, which was only three per cent. on these shipments.

MR. PRESIDENT: Now, I am sure that the time the Professor has taken up has been well spent indeed, and before we take up the next subject, which we might take up jointly with this the privilege will be given of asking the Professor any question you wish to ask.

MR. CASTON (Craighurst): There is more profit in the growing of early apples than in any other crop if you can get a market for them, but they come in at a time when it was very hot. I would like to ask in regard to the ventilation of the barrel. There seems to be a difference of opinion as to how they should be shipped on board the car.

THE PRESIDENT: That will come up under the head of transportation.

MR. CASTON—Then I will confine myself at present to asking the Professor this question: Does he find the tender variety of apples deteriorate very fast on the other side? That is what the commission men tell us; they are trying to discourage the shipment of apples in cold storage.

PROF. ROBERTSON: The reports I have are that when apples are taken out of cold storage in warm weather moisture forms on them, and that causes them to deteriorate. Without cold storage they cannot be sent at all. A Montreal shipper shipped Duchess without cold storage and they were a complete loss.

Rev. W. WYE SMITH: Would the Professor tell us whether the Canadian manufacturers have any good prospects for canned fruits in the Old Country?

Prof. ROBERTSON: I saw a good many samples of Canadian canned fruits in Britain. I spoke of them as favorably as I could at the Board of Trade, when I met merchants, and I examined some cans in the hands of merchants there, who said they were pleased with them. I think that is a growing trade. Just how profitable it is I do not know. There is no chance at all of Canada putting up sweet preserves or jams and sending these from Canada to compete with those made in Britain. The cost of the sugar and the cost of the glass and the tin packages are so much greater here than there we are out of that trade.

Mr. BRODIE: I might mention one matter in connection with shipping apples in cold storage. The moment they are taken off the trees and put in a barrel they should be put in cold storage immediately, because if they are left even a couple of days the ripening process goes on and they will be a total loss to the shipper.

TRANSPORTATION.

The PRESIDENT: As the questions seem to come in the line of transportation I think it would be well to take that subject up now; and as you have had so much to do, Prof. Robertson, in the transportation of fruit, I would ask you to open the discussion, and then Mr. Causton and others who are desirous of speaking on that subject will be gladly heard.

Prof. ROBERTSON: What I have to say on this subject will be rather suggestive than didactic. The more quickly an apple ripens the more quickly it rots. Ripening of apples goes on only when the fruit is held at a high enough temperature. If the temperature be put down low the ripening process practically stops. Now, unless some external means are taken to reduce the temperature, the ripening process goes on, and the ripening itself produces heat, and therefore makes the ripening go on still faster. I did not know one of the main uses of cold storage until I learned this morning from the paper read in the convention that the cause of the ever-increasing heat in apples was traceable to the actual presence of the devil in the fruit. (Laughter). Then I began to see that the devil himself, accustomed to a warm place, could not go on working in a very cold room. The reduction of temperature would certainly destroy the works of the devil, and that is said to be the highest use of human talent. Apples in ripening do create heat, and there must be a chance for letting the heat that is generated escape, and also a means of stopping the production of heat.

The early-ripening apples should be cooled down below 50° just as soon as possible after they are taken off the trees; and then they should be cooled down as low as 40° as soon as may be after that. By that means even the very earliest ripening sorts could be landed in Great Britain in first rate condition. Now, if they are put in barrels at even 60° Fahr. and headed up close they will get up to 70° Fahr. in the centre of the barrel in a short time. If they are put in the hold of the ship, the whole place gets above 70° Fahr. in a short time, and then the apples all arrive as "wets" and "slacks." In 1897 a lot of over 500 barrels was sent, and the half that went in cold storage sold for 18s. a barrel and the half that went not in cold storage went for 8s. a barrel at the same time. There is no way of carrying these tender apples across except in cold storage.

Our large apple trade, saying nothing of the tender and early-ripening and early-decaying sorts, is not in a good way; it is not on a good basis. I think I am quite within the mark in saying that 60 per cent. of the apples that go to Great Britain fetch less than two-thirds the price they could fetch if they were properly graded and properly and safely carried across the sea. Now, the grading and the packing and the carriage should

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not cost any more when done properly than in the haphazard way that has been allowed in the past. Just a word in regard to grading. It will pay any man who grows apples to feed all the small, mis-shapen and in any way blemished apples to his pigs, and not to try to sell them in barrels—particularly if for the British market. Half a barrel of good apples well selected, well assorted and safely carried will fetch more money than half a barrel of good apples plus half a barrel of poor apples; and the expense of carrying the poor apples has to be charged against the price of the good apples. To protect ourselves—we will have to get some way of rousing the growers to a realization that they must not allow any man to pack their apples unless he does so in the best possible way. If the growers allow the other practice to prevail they are simply cutting off the best market, because the British public won't pay the price for mixed apples that they will pay for graded apples.

The English merchant sells on commission, and he says, "Send in barrels," because he can sell more in barrels than in boxes; and the commercial man of to-day does not take any trouble if he can help it. Now, I would send apples across in bushel boxes and let the commission man fume for a while. A while ago they said, "You can't send any eggs here except in large cases." Now they all say our Canadian egg cases are the best on the market. Retail merchants tell me, "We can sell a small box of apples when we could not sell a barrel." It would pay a locality to have a cold storage into which the apples would go for three days before they are shipped. The steamship owners, without any contribution from the Government, have engaged this autumn to put in what they call ventilated cool storage in the ships; and apples will go better this way than in cold storage. It is provided by a duct to carry fresh cold air to the hold where the apples are. There is a cowl on top to catch the wind. Another duct leads from the top of hold to allow the warm air to escape. That makes a nice cool draught through the hold and allows the heat to escape. I think the apples should be cooled at the starting point, then carried in cool cars and in ventilated places on the steamships.

DR. MILLS: Would your recommendations apply to all varieties of apples?

Prof. ROBERTSON: All apples that are moved in hot weather. If every apple is cooled down before it is shipped it simply gives it so much better keeping quality when it gets to England.

A DELEGATE: What line of steamers is it that is going to put in these ventilators?

Prof. ROBERTSON: The Allans to Glasgow and London; Elder Dempster & Co. to Bristol; Thomsons to London; the Donaldsons to Glasgow; the Dominion Line to Liverpool, and others. There are several big lines out of Montreal arranging to have them for the carriage of apples. Without them apples and cheese were being carried in such bad condition that the trade was being imperilled. I think if the Fruit Growers' Association of Ontario and the Fruit Growers of Canada do not take hold of this transportation problem and bring about better methods and facilities, they may as well go out of the business. The fruit-growing has been done very well, but there has been so much loss and damage and dissatisfaction from the spoiling of fruit on the way to the markets, both for our home and foreign markets, that the matter must be taken hold of and corrected. It would pay every fruit locality to have a special cold storage building and a special agent to look after the transportation.

Mr. BOULTER: The cattle men have spent a great deal of money and did succeed in impressing the Government with the necessity of having a man in Montreal to see that those cattle were properly shipped at Montreal on those vessels. Now, has the Fruit Growers' Association any more interest than they have? And I want to ask, has anyone been appointed by the Government to look after the storing of fruit in the vessels and see that it is properly put on?

Prof. ROBERTSON: We have a special cold storage Inspector in Montreal, who looks after the cold storage on the ships, because the Government contributes part of the expense. I think the Government would not be willing to interfere—"Interfere" with a capital "I"—unless the trade ask them to; but if the fruit-growers ask to have a man

at Montreal and St. John, N. B., to look after the proper storing of fruit, in the steamships I think the asking would likely be the receiving. (Hear, hear.)

Mr. BOULTER: I am sure something of that kind should be done. On the 8th or 10th an article appeared that our High Commissioner, Lord Strathcona, was in hopes of being able to get our evaporated apples in the British navy as ship stores. Now he has just arrived in Canada, and I think if he was waited upon by a deputation, something perhaps might be done. If that could be done there is an inexhaustible demand for our evaporated apples. We could thus use the immense quantity of apples that are not fit to ship to the Old Country. I think it is very important that some definite action should be taken by this Association to look after that while Lord Strathcona is in Canada.

A. H. PETTIT: I would like to ask what is the prospect of capacity in cold storage on board our steamships: A great many want to know if there is space enough for them to ship?

Prof. ROBERTSON: I am not able to answer the question just yet, because negotiations are pending for an enlargement of the cold storage in the ships that now have it and the putting of it in the new steamships that are coming out. During this last season the cold storage chambers were more than filled from about the end of August. The applications for room in them were greater than the capacity of the cold storage from about the first week of September onwards; and the steamship companies are now offering to put in larger cold storage apartments on certain conditions, but the negotiations are not yet carried to a conclusion. The probability is there will be enough cold storage accommodation next year for all the tender fruits that are ready to go, and a better ventilated cool storage space for some variety of apples that are half way between the very tender ones and the fall ones.

Mr. GREGORY: Is there any prospect of a more speedy transit of fruit across the Atlantic being obtained in the near future?

Prof. ROBERTSON: The ships that are fitted with cold storage now are what they call nine and ten day boats from Montreal.

Mr. GREGORY: I notice the time you gave in your report was seventeen to twenty-one days. It seems to me that is longer than necessary from the time of its receipt on the ships till its arrival in the Old Country.

Mr. BRODIE: My experience is in shipping to Britain that when the market is glutted there are many slacks and wets, but when the market is firm the prices are good. I notice there are a great many commission men over here from the Old Country buying apples. Montreal is a great fruit centre. I think the best plan will be to have them come here and buy apples in Montreal. They cannot do without Canadian apples. American apples have no keeping properties, except Newtown Pippins, which bring better prices than some of our Canadian apples, but Canadian apples lead in price. I was speaking to one of our shippers in Montreal, and he told me there were more men from the other side buying apples than ever before, and he expected in the near future to see them all come over here to buy (Hear, hear).

Mr. CASTON: We have such a big country ourselves, we have a very large market within our own Dominion if we can land the apples there in a proper state. Great complaints come from Winnipeg and the Northwest about Ontario fruit arriving in such terribly bad condition, and the immense quantity of California fruit used there to the exclusion of ours. That is a very bad state of things. We require to study up the question of transportation within our own Dominion as well as across the ocean. I would like to ask the Secretary a question about the ventilated barrel. There is a difference of opinion as to whether the fruit goes best in a refrigerator car, in a close barrel, or in a ventilated barrel. Some here have used the ventilated barrel, the Secretary among others, and I would like to know what his experience is in that respect. It is nearly always hot weather when the early fruit is packed, and if it is put in a close car I do not see how you can expect it to get to the Northwest or any distance in good shape. The temperature of a good refrigerator car with three or four tons of ice is about 45

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deg., but it would carry fairly well in that. The question is, would it be well to have a ventilated package even in the refrigerator car, or have an ordinary close barrel? This is an important question, because there is a country from the head waters of the Ottawa to the Rocky mountains with a large mining as well as agricultural population, and in that stretch of country they will never be able to produce any of our fruits; and the farmers in the Northwest want our apples for cooking purposes at harvest time. (A voice: "That is right"). The transportation problem is in the way. The charges are too high. If we begin with the Duchess and follow that with our fall apples and lay them down so that the farmers could buy them, there is an immense outlet for our apples that is going to increase and grow. They grow No. 1 wheat and bring it down to compete with us, and we can retaliate with an article that they cannot grow. It is largely a question of transportation. I think nearly everyone is aware that there is a great reduction coming in force in the year 1898 in the freight charges to the Northwest of 33 per cent.

Mr. BOULTER: It is not in force yet.

Mr. CASTON: That reduction in freight with quick transit facilities ought to give us a great outlet for our fruits. I think the same thing would be true about grapes up there, but transportation charges are so high as to put them out of the reach of the ordinary consumer. I think the fruit growers ought to take some action to see that there are proper intervals for re-icing those cars. I have known a man losing \$100 on a car because the Railway Company would not undertake to re-ice the car. If these things are all in good order I do not see why our tender fruit should not be laid down in our own Dominion at a reasonable price to the consumer.

The SECRETARY: I think it is quite settled that the ventilated package is the only package for cold storage transportation. I have found that in my experimental shipments, and I have this summer sent some Astracans and Duchess across in a ventilated package with perfect success. This small package of Red Astracans has sold as high as five shillings for a case which only holds about a basket and a third, so you see that was exceedingly satisfactory. With regard to the ventilated barrel, I have used about 1,500 of the Kerr Patent Ventilated Barrel. I was very glad after the last was shipped, because the reports from England were that the ordinary tight barrel was the best, but that was not in cold storage. I believe for ordinary conditions the tight barrel is the best, but for cold storage I am satisfied you must have the ventilated package.

Mr. BOULTER: Last year I was in hopes that some of our own fruit was working its way into Winnipeg. The bulk of all the fruit in Winnipeg is from Missouri and Oregon, and complaint was made to me by one of the largest dealers that they could not get good early apples from Ontario. They want the apples out there in August, because they are commencing to work then. There is an unlimited demand for our early apples, but there are two very important items against them—first, the C.P.R. do not seem to understand it would be a great benefit for the people of Ontario to get apples into that country—it costs near \$2.00 to get a barrel of apples to Calgary; then in the shipping of them they claim that they are not properly packed, and perhaps they are justified in the complaint. Why are not the apples properly shipped? The trouble is the C.P.R. discriminates. Sometimes I have had the same rates by rail as I have had lake and rail. If we could ship our apples there in a refrigerator car and get them all rail it would be very helpful. Last year I sent good Northern Spys to Rossland, and you would be surprised at the fine remarks I got as to them. A party I heard from came from Peterboro, and he said he had not seen a Northern Spy for the last six years in Calgary. It is a shame we cannot supply that country with our own Ontario apples. There is going to be a wonderful demand for our fruits in British Columbia. But we talk these things over and get very nervous and excited about them, and the thing collapses, there is nothing done; we appoint a committee, but what is everybody's business is nobody's. Let a little money be spent by some practical business men in seeing that arrangements are made to get these goods out there.

Dr. SAUNDERS: I would just like to say somewhat in extenuation of the position

of the railway and express companies, that during the last year the express company reduced its rates from British Columbia to all points in the Northwest from \$4 to \$2.25. It was a big drop, and I believe the railway has also made some reduction in that direction, and I have no doubt the same rates, if they have not already been obtained, could be obtained in Ontario. That was a point I was going to bring out to-night, and I did not want to anticipate.

The PRESIDENT: I would like very much to hear from the representatives of the steamship lines, and if they are present we will take time to hear them, with pleasure. (Hear, hear.) Is Mr. J. D. Hunter present? Is there a representative of the Reford Company present? (Hear, hear.) It is evident they are not in the building, and it is very unfortunate they should leave the building just at a time when their subject is under discussion.

Mr. M. PETTIT: Unless the question of better transportation facilities in apples to Great Britain is discussed again I think we should not let these drop without taking some action. (Hear, hear.) Prof. Robertson has told us that if we ask for an Inspector, or whatever he may be called, to look after the better shipping facilities at the shipping ports, that we will likely get it. Well, I think we should appoint one or more delegates from this Association, and have our Secretary correspond with the Quebec Horticultural Society, and also the Nova Scotia Society, and have a delegation go to the Federal Government and urge strongly upon them the importance of having something done in this way. There is no question but there are hundreds and thousands of barrels of apples that are shipped across the ocean that are ruined on shipboard by being put in the wrong place, and if better facilities were brought about in this way it would be one of the greatest works that this Association has ever accomplished.

Mr. MCNEILL: I quite agree with that view of it if it is a motion.

The PRESIDENT: You simply anticipated me in this matter. Acting on the hint that Prof. Robertson gave us I immediately named a committee to take action in the matter. It is one that I think is very important, and to save time I would appoint the Secretary, Mr. A. H. Pettit, and the Vice-President, Mr. Orr, as a committee to memorialize the Government and if necessary to act as a delegation to the Government and if possible to get them to appoint a man to see after the safe storage on ships and proper ventilation of holds.

Mr. M. PETTIT: It is right so far as it goes, but I think we should authorize our Secretary to urge upon the other societies the importance of joining with us in asking that this be done; it would strengthen us very much.

The PRESIDENT: I will ask you to appoint this Committee, and I will ask you to draw up a resolution to pass this evening giving them proper instructions. Will that be satisfactory? ("All right.")

The President read a letter from the Allan Steamship Company regarding cold storage, addressed to Mr. Hunter, and also a letter from the Reford Company to the Secretary of the Association.

The PRESIDENT: As a representative of the steamship companies are not here I do not see that we can do anything further. Meeting adjourned at 5.50 till 8 p.m.

ADDRESS OF WELCOME.

The Mayor of the City, Mr. GILLELAND, said: It affords me a great deal of pleasure to meet so large and influential a body of men as compose the Fruit Growers' Association of Ontario, and to extend to you on behalf of the citizens of St. Catharines a cordial and hearty welcome. The industry represented by this Association is one that in the last few years has been making very rapid progress. It is not so very many years since it was a rare thing to find upon farms, even in the most favored localities for fruit growing, any fruit of any great variety. Of course we had the old standard apple, and in this section we wish we

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had more of it this year as we are a little short. But of late years it would be almost impossible to find a farm but has plenty of fruit growing upon it. While I would not be favourable to putting a farm entirely in fruit, it is important to have fruit. The methods adopted have been very much improved of late years. We see here in the corridors machines for spraying fruit and bringing it to its greatest perfection. We think it is very fitting that this Association should meet in the old Niagara district—a district that has been noted for raising fruit and good fruits for so long a time. We who live in the County of Lincoln think we have the choice locality for fruit, although there are other localities heard from, and that favorably. When it was decided to hold your meeting here we were very pleased to hear you had done so. We knew full well the benefits to be derived from meetings of the Association to those engaged in this locality in the business who might not have had opportunities of any Association meetings previously. We knew it would be interesting to hear the topics discussed by those who were so competent to deal with them. I can only say we are glad to have you with us. I trust your Association will continue to make such favorable progress as you have in the past. I am told by a member of the Association that not a great while ago your meetings were comparatively small, but of late years they have been growing so much in interest that the Association has been gradually growing larger. I will only repeat my hope that you will enjoy the meeting here, that you will find it pleasant and agreeable, and I can assure you that anything that can be done by the members of the Council of the city and by the inhabitants generally to make your visit pleasant and agreeable will be done, and I trust that you will never have cause to regret having fixed your place of meeting in the city of St. Catharines. We welcome you, hope you will have a good time, and will be glad to have you repeat your visit at any future occasion. (Applause.)

The PRESIDENT: I am sure on behalf of the Fruit Growers' Association that very few words from me are necessary in reply to your address, because if you will look into the countenances of the officers and directors of this Association you will see that they are pleased already with their visit to this city. We are convinced, too, by the intelligent audience before us that the efforts of the Association are appreciated. A few years ago the work of this society was on very different lines from what it is in the present day. Then fruit growing was profitable without labor, I may say—that is, the labor that is now expended upon the industry. At the present time the efforts of the society have been directed not only to the prevention of the ruination of our orchards by disease, fungi and insects, but to meeting the problem of over-production of our local markets and towards finding other markets for our products. That always is a very important matter, and one of deepest interest to everyone engaged in the fruit-growing industry, because having invested their means in the growing of fruit, they naturally wish to follow the occupation out on those lines. It is not an easy matter to change from a fruit grower to a grain grower. It is very much easier for a grain grower to go into the fruit business. Having trees coming into bearing, and having fruit maturing each year, there must be an outlet for that if they are to continue in the business, and to go out of it would mean a heavy loss in capital and time. I am happy to say that the efforts of the fruit growers in that direction are bringing about happy results. We have received the greatest consideration from not only the local Government but the Dominion Government in that line. They have responded to our requests most nobly in every way where we have brought our troubles under their notice, and we are happy to say that with their efforts we believe we are now working on the lines which will bring us safely over the troubles I have indicated. But as far as St. Catharines is concerned, and the county of Lincoln, and indeed the whole Niagara Peninsula, everyone recognizes that in no part of this continent is there a more desirable situation for this industry, taking it from every point of view. It has flourished in the past, and while for a few years the outlook was rather poor, I believe we have a bright future before us. We certainly feel grateful to the city of St. Catharines and yourself and the Council for the hearty manner in which they have welcomed us. We are trying to do good. We labor in this institution without pay or favor, and labor for the common good; and the greatest gratification and the best pay that we can have as members of the Association is to know that our efforts shall be crowned with success.

THE PRESIDENT'S ANNUAL ADDRESS.

BY W. E. WELLINGTON, TORONTO.

It is always a source of gratification, when the head of a corporation can meet his Board of Directors, with a satisfactory balance sheet. The President's address is then one of a congratulatory nature, and the work is necessarily much lighter than when he has a long list of losses to explain in justification of his management. While we are not working for, or looking forward to dividends, in the Ontario Fruit Growers' Association, we are all much interested in the success of our Society, both from a financial point of view, and the accomplishment of the work that we give our time and thought to.

I am proud to say that I am able to congratulate the officers and members of the Ontario Fruit Growers' Association, on a successful year's work. Financially, I think the Society now stands higher than ever before in its history, and I believe the work of the Association is of the greatest benefit to the fruit growers of Canada.

Our monthly journal, under the able and industrious efforts of our Secretary and editor, is constantly improving, and is highly thought of, not only in Canada, but in many parts of the neighboring republic. While I do not think we have yet reached that point of excellence and superiority we should be ambitious to attain, we certainly are improving, and if we continue to improve in the next few years, at the same rate as the past year, we may look forward to soon publishing a journal that will take high rank with the best horticultural journals in America.

A few facts and figures will speak more eloquently than any words I can command. Last year, we reported \$3,325.17 paid in fees, and this year we are able to report \$4,147.13 paid in fees. The number of paid members in 1897 was 3315, while for 1898 we have 4,151 paid members, and in addition 375 members still unpaid, and this we look with confidence to receiving within a very short period of time.

The total receipts in 1896 have reached the magnificent sum of \$6,585.94, and after paying all expenses, we are able to report a balance in hand of \$784.96. This I think will be very gratifying to every member of the Association, and with this balance in hand, I would strongly recommend that for the incoming year efforts should be made to increase the size of the Journal, and also to increase again the subscription list. In fact, I believe if the size of the Journal is increased, and made at least one-third larger than at present, there would be little difficulty in securing additional members enough to carry on the work profitably, and also increase the benefits to every member of the Society in a practical way.

I wish particularly to draw attention to the numerous photogravures which illustrate the "Canadian Horticulturist", and which I think very materially increases its attractiveness. This is a decided improvement on the old style colored plate illustrations, and I think we can well afford to continue on these lines in the future.

Turning from the financial success of the Society, I would call your attention to the practical work of the Association, which I believe has been correspondingly successful.

The local horticultural societies are an interesting feature of our work, and are looked upon with great favor by the Department of Agriculture. These affiliated societies, are far more successful in their operations than the old agricultural societies, which benefited only a few professional prize-winners. Our plan is that every member should receive an equal benefit, either in literature or in plants. The number of Societies reported last year was 27. Now we have 36. In addition to this, there is the prospect of several more uniting with us during the present month. The Fruit Growers' Association has agreed to send a lecturer once a year, to each of these societies. This will keep them in touch with us, and us with them, besides carrying out one of the most important conditions of the Agriculture and Arts Act.

I would call the attention of my hearers to the article on page 438 of the November

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number of the "Canadian Horticulturist" which describes the meeting of the Orangeville Horticultural Society. This is only a sample of the meetings held by the different societies with which we are affiliated, and will carry a very good idea of the interesting work that is being done. The enthusiasm which is awakened at some of these local meetings, is most gratifying, and encourages me to suggest that the work in that direction should be considerably extended the coming year.

Another work which may well be placed to the credit of the Ontario Fruit Growers' Association mainly, is the efforts to stamp out that terrible pest, the San José Scale. As you well know, a delegation from this Association was sent to Ottawa, to confer with the Minister of Agriculture regarding the importation of American stock, which has been so largely infested with this pest. On behalf of myself and colleagues who visited Ottawa, I wish to publicly thank the Hon. Sydney Fisher, for the courteous manner in which he received the delegation, and also for the prompt way in which he responded to our wishes. We found the Hon. Mr. Fisher had become fully alive to the importance of our mission, and his subsequent prompt action, shows that in him we have a man, who has thoroughly at heart the interests of the fruit growers of Canada.

The Local Legislature has in every way seconded the efforts of the Dominion Government in stamping out the San José Scale. I believe they have followed the work with vigor and energy, and are now able to show a comparatively clean sheet, and thus avoid the danger which threatened our fruit growers, of having their fruit excluded from the best foreign markets. Now, while Germany has excluded California fruit, there is no bar to that from Canada. We can now reasonably hope, that with the measures that have been adopted, the dreaded pest of the San José Scale will be kept in subjection in Canada, and we can only hope that at an early day, our neighbors across the line, who have now become very thoroughly awakened to the danger to fruit-growing in that country, will be able, by their efforts, to stamp out the pest, and that commercial relations may soon safely be resumed between the two countries.

Another important department of work, which has been largely brought about through the agency of our Association, is the Fruit Experimental work. I need not go into details of this work, because you are probably as familiar with it as I am. The reports printed by the Government are very full, and will give every member the fullest details as to the work of the different Stations. I think this work will prove of the greatest possible benefit to the Fruit Growers of Canada.

Not only have Stations been established in the well-known fruit-growing districts of the Province, but the Board of Control have established Stations in the more exposed districts of Canada, where fruit-growing has never been successfully carried on.

At the last meeting of the Board of Control the Hon. Minister of Agriculture for Ontario, suggested that the Government Farm in Algoma might be used for experimental work, and it was decided to accept the offer, and plantings of the hardiest varieties of trees known to the Board will be sent to Algoma in the spring, and thoroughly tested. An experimental station will also be started at St. Joseph Island in Algoma, which is confidently hoped will be of estimable value to the settlers in northern districts.

At our southern stations efforts are being made to test nut culture for profit; also new varieties of fruits, that otherwise might be lost to notice, and which, if of merit, we hope to bring into prominence.

In connection with the work of the Board of Control, a descriptive work on fruits of Ontario is being compiled by the secretary. Photographs of the different fruits are taken from year to year, as they can be obtained, and accurate descriptions written, so that at no distant date, we hope to present a work to the public, that will be reliable and of the greatest possible value to the fruit growers of this Province. We are also making the attempt this year to prepare a catalogue of fruits adapted to all parts of our Province.

Another important feature of the work of the Association is the plant distribution. Not only are the plants and trees distributed, of value to the subscribers, but sent as they

are, to all parts of the Province—in fact, to all parts of the Dominion of Canada—it submits the different varieties to a test that will show their adaptability to the section in which they are planted. To give you an idea of the work that this distribution entails, and the interest with which the members of the Association regard it, I give you a list of the plants and trees distributed for 1898. They were:—430 Paeonias; 1,582 Crimson Rambler Rose; 292 Gault Raspberry; 171 Victoria Black Currant; 1,151 Wickson Plum

Still another important feature of our work, is the encouragement which has been given to the export of fruit in cold storage to Great Britain. Especially has this been beneficial to fruit growers, in giving them practical knowledge as to the proper way in which to pack and prepare tender fruit for shipment in cold storage to Great Britain. Plans were formed by this Association, and submitted to the Minister of Agriculture, which have been carried out by him, and which are likely to prove of the most vital importance to the fruit growers of our country. Our own markets were beginning to be so over-stocked, that remunerative prices were no longer received for our produce, and our fruit growers were becoming discouraged, and were beginning to feel that they would have to give up the business.

Now, after two years of experiment, we have demonstrated clearly, that our pears can be exported to Great Britain, with the greatest success, and also bring to the grower the old prices which made fruit growing so profitable an industry in the past. Also that tender apples, such as Astrachan and Duchess, can be exported with success, and bring long prices in the British markets. Tomatoes also, with proper carriage, and if picked in a green state, can be safely exported, and will pay handsomely. I believe too, that in the near future, we shall find a profitable market for peaches, especially if varieties are grown that are not so soft as the Early Crawford.

The experiments of two years, have on the whole, been attended with very gratifying results, and as we gain experience we shall soon be able, I feel certain, to land our best, and even some of our most tender fruits, in the British market, where prices will be realized that will be encouraging and profitable to our fruit growers. This work of the Society is of inestimable value to the fruit grower generally.

I might go more fully into facts and figures, but do not consider it necessary, after the article that appeared in the August number of the *Horticulturist*, on page 303. This article alone, with its accompanying illustrations, is worth many many times the expense attending the membership of this Society.

I might still further enlarge my address by referring to the crops of the different fruits in Canada and the United States, but this I think is needless because all such information is furnished in our magazine and other horticultural journals published on this continent.

We all know that for the past two years the apple crop has been rather light in most sections as compared with 1896, when the crop of apples from Canada and the United States was 69,879,000 barrels, which decreased in 1897 to 41,536,000, while this year the total crop is only 27,681,000 barrels. Nova Scotia this year is fortunate in having a crop of superb quality and fair proportions—the famous Annapolis Valley yielding 75 per cent. of the full crop, or three times the number of barrels produced last year. The quality is fine, and dealers are readily paying \$2 per barrel.

The Ontario crop is decidedly short, Western Ontario having the best, but the heavy fruit belt from Buffalo around the head of Lake Ontario has a light crop, and the surplus for export will be comparatively small.

It is interesting to note that the number of apple trees planted in Ontario over fifteen years of age is 6,221,000, and under that age the number is 3,459,000. Probably, in round numbers, 10,000,000 of apple trees are growing in the Province of Ontario.

The apple crop in Europe being short, prices there will probably average higher than for many years past. I think on the whole the outlook for the fruit grower is encouraging.

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I have as briefly as possibly gone over the main points of the work of this Association, and I trust that the members will agree with me that the year's work has been very satisfactory, not only financially, but that the practical work of the Association is such as to give it the confidence of the fruit grower; and I believe I am safe in stating that in no other way can as much be obtained for one dollar as by becoming a member of this Association and subscribing to the *Canadian Horticulturist*, issued by the Fruit Growers' Association of Ontario.

I have now completed my second year of the presidency, and resign the work to the hands of the incoming president and officers, with every confidence that the good work will continue and that each year progress will be reported.

I wish to thank the officers and also the members of the Association for the help they have given in reaching the present gratifying position which the Fruit Growers' Association of Ontario holds.

MANITOBA AND THE NORTHWEST TERRITORIES AS MARKETS FOR ONTARIO AND BRITISH COLUMBIA FRUIT.

BY DR. WM. SAUNDERS, DIRECTOR EXPERIMENTAL FARMS, OTTAWA.

In view of the fact that Ontario is increasing so rapidly in the volume of fruit which it produces annually, it becomes of the greatest importance that we should look around for new markets, and that we should take advantage of every opportunity afforded us of increasing our sales in every direction. Although we now produce large quantities of fruit, we grow but a tithe of what we could grow provided we could find sufficiently large markets for our surplus. This subject has been given me, I presume, for the reason that travelling as I do across the Dominion every year, and sometimes twice a year, I have opportunities of becoming fairly familiar with the country and its products.

EXTENT OF COUNTRY.—I shall first call your attention to the extent of this country. Manitoba extends 320 miles along the C. P. R., and has its two additional southern lines running parallel; it has also a line running north in the Dauphin Lake territory. A very important point in connection with the demand in any country for fruit is the number of villages, towns and cities to be supplied. Winnipeg now has a population of 40,000, Brandon 6,000, Portage la Prairie 4,500, and besides these larger towns there are many small places with a population varying from 200 to 1,000 or more in each. In addition there is a large population of farmers scattered through the country, and most of them, owing to the good crops which have been grown there for some years past, are very well to do, and as far as I know the people there are exceedingly fond of fruit and willing to pay almost any reasonable price for a good article. The cheaper it is, however, the larger the consumption will naturally be. Passing on to the Territories, we have a further stretch of settled country for 200 miles beyond the Manitoba boundary until we reach what is known as the Moosejaw district, where the general settlement of the country practically ends. Beyond that, for another 400 miles, until you reach the foot-hills of the Rocky Mountains the country, is more or less arid, and while agriculture is quite possible where irrigation can be practised the greater part of the country is bare of any attempts at cultivation, and is mostly used for ranching, bands of cattle and horses being kept at different points. As you approach within fifty miles of the Rocky mountains, you reach the town of Calgary, another important centre of population with about 4,500 people. It is also a railway centre, having a line running north for 200 miles to Edmonton, passing through many villages and small towns on the way to the terminus, and another line running south to Fort McLeod, which connects with the Crow's Nest Pass Railway at that point, and carries supplies to the population in the mining districts. So you see, taking those sections of the Territories together with the eastern part, Regina with its population of 2,200, Qu'Appelle with about 1,000, and Broadview 800, and a number of other small places along the main line, together with the branch line running from Regina to Prince Albert 250 miles, you

have a stretch of country which although as yet sparsely populated is filling up with a fair amount of rapidity, many thousands of new settlers coming in every year, some from Europe and some from the United States. Throughout this whole region there is a growing demand for fruit which will admit of a consumption far exceeding anything we have at present any idea of, provided we can get the surplus stock which can be easily produced in Ontario landed there so as to be sold at reasonable rates. Talking with a gentleman from Prince Albert some time ago on this subject of fruit, he said, "Why, we have been so accustomed to pay about fifteen cents a pound for fruit that now it has got down to eight and ten cents a pound it seems to be a comparatively cheap article of diet, and we are making use of it very freely."

FRUIT GROWING IN THE NORTH-WEST COUNTRY.—I shall next call your attention to another aspect of the subject, and consider what these people living in this district, extending for a thousand miles from east to west, and 350 from north to south, are able to do for themselves in the way of growing fruit. The cultivation of strawberries has been tried at a great many different points in this part of our country, and it has not been attended with much success. Strawberry vines are hardy, but in the autumn, about the time when the young runners begin to root, the ground in the North-West is usually so dry that for an inch or two the soil becomes almost like ashes, and the winds are so frequent that the vines are rarely still, and the runners are blown about from point to point and never stay long enough in one place to send out roots, and for that reason there is seldom much success in propagating the strawberry. Where irrigation can be practised that difficulty can be overcome. Under such circumstances plots of strawberries may be grown with a fair measure of success as far as multiplication of the plants are concerned. But there is another difficulty to contend with. In the springtime it often happens that heavy frosts occur in the morning and a hot sun shines during the day. This occurs usually in April and sometimes in the early part of May, after the strawberries are in flower, and you know the effect of severe frost on strawberry blossoms—it destroys them completely, and so lessens the crop that strawberry growing cannot be relied on anywhere as a profitable industry, and this fruit is chiefly grown by amateurs. Raspberries are cultivated more successfully, and some fairly good crops are grown in some parts of Southern Manitoba, and also in the neighborhood of Winnipeg, but there is not a sufficient supply to give the general public what they want in this line. Black cap raspberries are less hardy, and blackberries are usually too tender. Red and white currants can be grown very successfully all over Manitoba and the Territories, provided there are no severe spring frosts to injure the crop after the blossoms open; in that case they can be depended on as a fairly reliable crop. The same may be said of black currants, all the varieties of which are hardy and succeed well, and, barring the effect of frosts, where they get a favorable season the crops are usually good.

Among the large fruit no success in a general way has attended the efforts to grow apples, pears, such plums as we grow in the east, or grapes. At the Experimental Farm at Brandon—and similar experiments have been carried on 200 miles further west at the Experimental Farm at Indian Head—we have tested over 200 varieties of Russian apples of the hardiest sorts that can be found. We have also tested all the hardy varieties of pears, plums and cherries, and have also tried a large number of small fruits. None of the larger fruits have succeeded, although we have been working on this line at Brandon and Indian Head for more than ten years. We have sent thousands of apple trees to these farms but have never yet succeeded in producing an apple. Hence, as you see, we have not had much encouragement thus far. Near Morden in Manitoba, which is in the Red River Valley and south of Winnipeg, at an altitude very much the same as that of Winnipeg, that is about 700 feet, or nearly 500 feet lower than the experimental farm at Brandon, there is one farmer who has an exceptionally sheltered spot who has grown fair crops of crab apples on a few trees, and he has also produced a few larger apples of several Russian varieties. This is considered quite a feat in that country, and is chronicled in the newspapers, and specimens are photographed and made much of, showing that it is a feat not often or very easily accomplished. I visited this plantation several years ago. It is owned by Mr. Stevenson, who is an enthusiast in this work. There have also been a few crab apples produced in the neighborhood of Winni-

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peg, and a few more in Southern Manitoba, and that is about the extent to which these fruits have been grown in that country thus far. I visited Edmonton, 200 miles north of Calgary, several years ago, and almost the first person I met when he knew who I was and where I came from said, "Oh, you must go and see Mrs. So-and-So's garden; she has got a Tetofsky apple on a tree, and you must see that before you go." So I went over to see this prodigy, and there happened to be an American friend travelling with me with a camera, so I asked him to come along and take a photograph of this wonderful fruit. When we got there we found that the apple was not a Tetofsky apple at all, but a Whitney Crab. (Laughter) As there was but one specimen on the lower part of the tree, and it was pretty well covered with foliage and the lady was much disappointed when it was pronounced to be a crab, we left the place without taking a photograph of this fruit. Altitude in the Northwest country often makes more difference and stands more in the way of success in the growing of trees and shrubs than latitude; hence in going west, as you rise higher and higher the difficulties increase. At Brandon, where the altitude is 450 feet greater than it is at Winnipeg, we have had no such success as that I referred to as having been had by Mr. Stevenson near Morden. The only variety of fruit that can be called an apple which we have yet produced at Brandon is the berried crab *Pyrus baccata*, a small crab which grows wild in the northern part of Siberia. This fruit, which is about as large as a cherry and with a stem almost as long would scarcely be recognized in this country as an apple—yet it is valuable for making jelly, for most of you no doubt know that jelly comes chiefly from the core, seeds and under the skin of the apple, and as these little apples are nearly all core, seeds and skin they make more jelly per pound than the larger apples would, and it is just as good. We are, however, trying some experiments at Ottawa which I hope may result in increasing the size of this apple. The *Pyrus baccata* has been crossed with such apples as Tetofsky, Duchess, Yellow Transparent, Fameuse and Ribston Pippin and quite a number of other varieties, including some of the hardier Russian forms, and we have now growing at Ottawa 750 of these young cross-bred trees, each one of which is a distinct variety, and we are hoping, by multiplying the chances in this way, to produce something good eventually, and trust that in a few years we shall be able to thus improve this small, wild Siberian crab and increase its size so as to make it a tolerably useful apple to the people in the Northwest country. We do not expect to produce such varieties as will be competitors to any extent with the fruit that Ontario could ship there, but if we could grow an apple equal to the Transcendant crab and produce it in abundance it would be worth hundreds of thousands of dollars to that country. In many districts remote from railways the people seldom taste fruit at all, and to be able to grow fruit as palatable as the Transcendant crab would be something to be proud of. Householders would rejoice in such a production to an extent which these of you who are privileged to be surrounded by beautiful fruits can scarcely understand. Besides, the growing of such apples in that country would not only add largely to the comforts of the householder, but would give the climate of the country an additional recommendation. As you go further westward the altitude increases, and by the time you reach Calgary you have attained an elevation of 3,388. If so little can be done at Brandon at a height of 1,150 feet, but little success can be expected in the higher altitudes. In Manitoba in the river valleys, in the lower altitudes, the wild plum is common and usually fruits well, but the quality of the fruit is very variable. A large proportion of the trees produce inferior fruit. Some of them, however, have fruit which is very acceptable to the people, and it varies in color as the wild plum does in the east, from yellow to red. The trees are generally hardy, and they will not only grow in the river valleys, but when transplanted to higher altitudes most of them will grow and bear well. The Sand Cherry, *Prunus pumila*, is also found throughout most of that section of the Dominion, growing in many localities as far north as Prince Albert, where the fruit is produced in considerable abundance. The fruit of this shrub varies also, like the wild plum, very much in its quality and character. Some bushes produce cherries that are quite a good size. I have seen them nearly as large as the English Morello; then again you find them but little more than a skin stretched over the stone, with no pulp at all worth speaking of, and not only astringent but bitter. By selecting the best of these varieties of Sand Cherry, as has been done at Brandon,

and growing seedlings from them and propagating these by layers and distributing them among the people, we are doing a work which is much appreciated. Should the experiments now being tried on the *Pyrus Baccata* prove successful, and the further work of producing good varieties from the wild plum and the Sand Cherry by careful selection meet with good results, we have along these three lines of work some promise of useful fruits for this western country in the near future.

SOME NATIVE FRUITS.—In some districts wild strawberries are found, but not to any extent—the wild raspberry is much commoner. The fruit of the wild black currant is also common, and is used very generally, though it is rather strong in flavor. The Saskatoon berry is another favorite fruit in that country, and in plentiful years it is collected in large quantities and dried. The fruit is very much like what we know in the east as the Shad bush or June berry, and reminds one somewhat of the Blueberry in its flavor, and is a very good berry, especially if you are fruit hungry and cannot get anything else of that sort to eat. The Pin Cherry, *Prunus Pennsylvanica*, which grows in the east also has a very small fruit, yet it is regarded there with favor by many people, who gather it and make jams and jellies from the little pulp there is over the stone; and by gathering plenty of the fruit one can succeed in getting a reasonable amount of jelly. These smaller fruits, with the wild plum, the Sand Cherry, and further east down towards Rat Portage the Blueberry, make rather a meagre bill of fare. Hence there is a very large demand for good fruit, most of which Ontario and British Columbia could supply, but up to the present time about eighty per cent. of it has been supplied by the United States, some of it coming from California, some from Oregon and Washington, and some from the Western States of Illinois, Michigan and Minnesota. It seems scarcely creditable to the enterprise of our fruit growers that four-fifths of all the fruit that is at present used over this whole stretch of country, populated at present probably by nearly 250,000 people, is sent in from the United States. Here is a market that Ontario should do something to capture.

FRUIT GROWING IN BRITISH COLUMBIA.—Let us see what British Columbia is doing, and what she can probably supply. Crossing the Rocky Mountains at a height about 5,000 or 6,000 feet you descend on the other side into what is known as the Columbia Valley, where the first crossing of the Columbia River occurs. In this valley, from Golden to Donald, which is at an altitude of about 2,530 feet, and much sheltered by high mountains, some experiments are being carried on in fruit growing, and although they have not been conducted long enough to demonstrate much, still there seems to be fair prospects of success with some of the hardier fruits in that valley. The Columbia River flows north at the first crossing, and makes a great bend above the base of the Selkirk range of mountains, and then flows south, so that after crossing the Selkirks, which form the second range of mountains at about the same altitude as that at which the Rockies are crossed, you descend into another valley where the Columbia is crossed the second time, and there the altitude is less. At that second crossing, at Revelstoke, it is only 1,475 feet—about 300 feet higher than we have at Brandon—and much more sheltered. There the climate is milder, and along that river valley from Revelstoke down to Rossland there have been within the last three or four years some very successful efforts made in the way of growing small fruits, and there are a few old-timers who have been there a number of years who have had apples and other trees which have been producing of late fairly good crops of fruit. Hence that may be taken as the beginning of the fruit growing district, or the eastern extremity of the fruit growing districts of British Columbia. After the third range of mountains known as the Gold range, is crossed, which is not nearly as high as either the Rockies or Selkirks, you strike another series of valleys at a point which you will find on the railway guide marked as Sycamous, a station which is 1,300 feet above the sea level, and stands at the head of what is called the Spulmacheen valley which extends south about 30 miles, and south of that lies the Okanagan valley, which most of you have heard of as a fruit growing district, where Lord Aberdeen has a large ranch, and has a 200-acre apple orchard which is coming into bearing very nicely. There is quite a large number of apples produced in that valley, but they get prices such as you would not dream of getting here. I travelled through that district in August last and visited Lord

Aberdeen's ranch another orchard valley. At K town at three in boxes, not mining districts the other ranch doing better considered a regarded as a getting fruit in duction and t numbers of va are also a n and other goo also have good The season is ripening well; country as far compete with valley last year heard of peach trees with fru that possibly t of good qualit the orchards a

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Aberdeen's ranch at Coldstream, which is in the upper part of the Okanagan Valley, and another orchard which he has near the town of Kelowna, situated about the middle of the valley. At Kelowna the manager told me he had sold all his apples to a firm in that town at three cents a pound. All he had to do was to pick them and take them in boxes, not packed in any way, and they undertook to pack them and ship them to the mining districts, and were doing fairly well with them, buying them at that figure. At the other ranch the manager said he was not willing to take such a low price, that he was doing better by shipping them direct to the mining districts. \$1.80 a bushel would be considered a pretty good price for apples in this neighborhood, but there it was not regarded as anything extraordinary. Such prices are mainly due to the difficulties of getting fruit in from the outside on account of the great distance from the points of production and the expense of transportation. In the Okanagan valley there are large numbers of varieties of apples grown, and they do very well, and bear abundantly. There are also a number of pears produced, such as the Bartlett, Flemish Beauty, Anjou, and other good sorts, and these also bear well. Plums bear abundantly and cherries also have good crops, but the season is not long enough there for the ripening of grapes. The season is too short also in the Coast climate of British Columbia to permit of grapes ripening well; so that as far as grapes are concerned Ontario has no competitor in this western country as far as the Dominion is concerned. California is the only country which can compete with you in that particular. I was surprised on going through the Okanagan valley last year to find in several places quite a number of peach trees in bearing. I had heard of peach trees down there doing wonderfully well, but had never before seen any trees with fruit on them, and as this was my third visit to the valley I began to think that possibly they never bore; but this year there was a considerable quantity of peaches of good quality, some of which I had the pleasure of testing on the trees, which sold in the orchards at five cents a pound, and must have netted their owners very good returns.

FRUIT IN THE COAST CLIMATE.—Starting from the terminus of the Canadian Pacific Railway at Vancouver, and coming east again, we have between Vancouver and the Coast range of mountains—which is the last range you cross in going to the Pacific Ocean—about 100 miles of territory in which there are a large number of valleys where the land is rich and the country sheltered by mountains, and the climate is very much like the climate of England. Here apples, pears, plums and cherries can be grown in the greatest abundance. Plums I have never seen grow so abundantly anywhere as in that region, and the apple trees also bear very heavily. Throughout this whole territory a great deal of enterprise has been shown of late years in fruit growing, and orchards are being planted in every direction. During the past year, 1898, the weather has been warmer than usual, and at Agassiz, where the Experimental Farm is located for that Province, which is 70 miles east of Vancouver, we have succeeded in ripening quite a number of varieties of grapes, including the Delaware, Agawam, Brighton, and a number of other sorts, some of which have not ripened on that farm in any season before. The experience of this year shows, however, that in favorable years a limited quantity of grapes, such as people can eat, may be grown, but they are not thoroughly ripened or such as you would call fully ripe in this section of the country; they are, however, quite eatable and are in demand there. The quantity of such fruit available, nevertheless, even in a favorable season, is quite insufficient to supply the home market, and the crop is too unreliable to induce extensive planting. British Columbia, however, may be expected to be a formidable competitor of Ontario in the production of plums, apples, pears and cherries, and every year as the new orchards come into bearing—and they are coming into bearing very rapidly—the quantity of fruit produced will be increased very much. In point of distance, taking Winnipeg as the great distributing centre, which it is, Ontario has an advantage, for while Vancouver is 1,464 miles from Winnipeg, Ottawa is only about 1,300, and Toronto would be somewhat nearer. For Calgary, however, and Regina, and the lines running north, British Columbia is nearer, and would have some advantage in supplying those districts. The fruit growers in British Columbia have been very much handicapped by the heavy rates which have been charged in past years for transportation. Four years ago six cents a pound was charged to carry fruits by express from Vancouver to Winnipeg, subsequently it was

reduced to five cents, and the year before last it come down to four cents ; but as fruits began to be produced in considerable quantities and the surplus had to be shipped somewhere the growers could not afford to pay four cents per pound to send plums to Winnipeg—it made the price too high to permit of the consumption becoming very large—so they organized and formed an Association, and made arrangements with the railway for cheaper rates by freight, and sent a man through with each carload of fruit, who landed a certain number of boxes at Calgary, other lots at Regina and other points, taking the remainder of the car through to Winnipeg. They had the privilege of thus unloading as they went along, all at the same rate. This reduced the cost of transportation to something less than two cents, but it delayed the distribution of fruit very much, and by the time the car had reached Winnipeg with all the delays incident to the journey, the fruit which was left was usually in bad order. In the meantime the express company found they would have to do something in the way of reducing rates, if they were to secure any part of this business, so this year negotiations were opened between the Association of Fruit Growers of the Fraser Valley and the Dominion Express Company, and the Company very generously brought the rate down to \$2.25 from Vancouver or any point in British Columbia to Winnipeg or any point in the Northwest. This great reduction has given a wonderful impetus to fruit growing in that Province, and has given the growers courage, so that they are trying to make the best of their opportunities and are doing remarkably well. In connection with their shipping association they have meetings to discuss the best kinds of packages, and instead of shipping their fruit in clumsy rough boxes as they used to do two or three years ago, they are using the California packages now, those small light boxes with four baskets in a box, and all their plums are sent to market in that way. They are also paying more attention to the selection of their fruit, which is a matter of great moment if a profitable business is to be done. In that Association every grower must put his name on every box of fruit he ships, so that the careless packing is easily traced to its source, and the man gets such a rubbing down from the secretary who looks after the affairs of the Association that he is very apt to mend his ways in a short time ; hence a much better condition now exists than formerly. Fruit reaches the consumer in about three days from the time of shipment by this arrangement with the express company and usually in good condition.

AN OPENING FOR ONTARIO FRUIT.—Ontario could secure a large part of this trade with Winnipeg and the west for apples and pears, also a considerable part of the trade in plums and cherries as far west as Regina, and as far as the grape trade is concerned, as I have already remarked, the whole of that is open to Ontario growers. Here is a market for our own fruits where the tastes of the people do not require to be educated to appreciate the flavor, for instance, of our grapes. Indeed, many of the people having been brought up in the east will prefer,—and I have been surprised at this—the Ontario grown grapes to the California grapes, which to my mind are very much better than those of Ontario ; but having acquired a fondness for the musky flavor found in many of our grapes they will give the preference even at the same price to Ontario fruit. At present, Ontario fruit has not a very high reputation in Winnipeg, largely it is said, for the reason that in the past it has been very carelessly shipped. To put a lot of baskets of grapes in a freight car and have them bumped and thumped against other freight cars for four or five days on the way to Winnipeg, generally shakes the baskets of this fruit to such an extent that a large part of the grapes are reduced almost to a condition of pulp. When bruised in that way, they soon get mildewed, and in a closed car, unless the car is iced, the chances of getting fruit of that character to Winnipeg in good condition in such packages as you use to send them to Toronto is not very great. Indeed, there must be a very thorough reformation in that particular, and the interests at stake will warrant the taking of any reasonable pains to bring success, and I do not think that any form of package yet devised is better adapted for this purpose than that used by the British Columbia fruit growers, which is the California package. In this there are four baskets, each holding about 6 pounds, the whole package weighing about 25 pounds, a weight which is easily handled. I have no doubt that arrangements could be made by Ontario fruit growers with the express company whereby they would get at least as good rates as are given to

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British Columbia people, and by this route fruit could be delivered in three days from time of shipping to any part of that country on the main line as far as Regina, and Ontario grapes if well put up and carefully handled should stand that length of time in transportation and reach their destination in perfect order. A word to the wise, it is said, is sufficient. I hope that some Ontario fruit growers, although they may have made unsuccessful attempts in the past, will use their best efforts towards capturing some fair share of this market. It will not do to run away with the idea that any sort of fruit will suit the Winnipeg people. In talking recently with the largest fruit merchant there, he said: "If you have at any time the opportunity of talking to the large fruit growers in Ontario, impress upon their minds the fact that nothing is too good for Winnipeg, and that it won't pay them to ship inferior fruit." He said "It is disagreeable for us to handle it, we have so many complaints, and it gives no profit whatever to the shipper, because so much of it has to be rejected." A demand for Ontario fruit once established in the Northwest country would be an ever-increasing one as the population multiplies, and would in a short time, I am sure, get to be a trade quite well worth looking after. Through the kindness of the manager of the Macpherson Fruit Company at Winnipeg I have been furnished with some particulars as to the quantity of fruit handled by that one firm during the past year, from that source. Mr. Scott tells me that they have handled of British Columbia plums this season about 10,000 cases of about 20 pounds each, besides small experimental shipments of 200 cases of strawberries and 25 cases of cherries. Many of the earlier shipments of plums he says, came in bad order, but the later shipments were all right. In regard to Ontario fruit, he said, "We have not had good results yet from plums or peaches, and we are inclined to think that it is a difficult matter to ship these two varieties of fruits to this point at a profit." He says it takes some time in a comparatively small market like that to dispose of a car load of fruit, and in the meantime the perishable varieties depreciate very rapidly. Grapes, however, he says, tomatoes and pears in baskets, or packed in boxes as the California pears are sent in, come in perfect condition, and if shipped in good refrigerator cars well iced, there would be no difficulty in carrying any quantity from Ontario to that market.

I might also speak of the demand further east, and nearer home, where there is another town of importance, Rat Portage, with 4,000 to 5,000 people, and some other smaller places between that and the fruit-growing districts of Ontario, which can scarcely be said to extend much further west than Pembroke. Beyond that you may say that fruit-growing is largely experimental, and the quantity of fruit produced is entirely insufficient for supplying the needs of the people. The residents in the west are hungry for fruit, and continually wondering why it is that with such vast quantities of fruit in Ontario, much of which is said to be sold at unremunerative prices, they should be debarred the privilege of disposing of large quantities of it at reasonable rates. I hope that some arrangement will be reached in the near future whereby the large surplus, which is an accumulating one in Ontario, will be made available to these fruit hungry people in the Northwest.

Mr. McNEILL: I am sure a few remarks will be in order just here without waiting for an invitation. I have been waiting for this opportunity for some time. I am really pleased to have a chance now to express myself plainly and clearly. I am sure that we must all have been pleased as fruit-growers with the earnest efforts of Dr. Saunders in this direction of making markets for us. It is that end of the fruit-growing business that must be attended to, and we are extremely obliged not only on this occasion, but on every other occasion, when he has had the chance to do something for us. At the same time he has given an opportunity to-night of saying a few plain things which I hope will reach the people of Manitoba. Here we are, fruit-growers of Ontario, with any amount of fruit, anxious to sell it and willing to give them the very best, and here are the people of the Northwest anxious to get it. But we cannot get our money out of it when we send it up to them. There are the plain facts of the case. Surely there is intelligence enough in this Association to get at the reason, and find out why it is that there should be such a discrepancy between the fruit-grower and the fruit-eater. These remarks come a little personal from the fruit men in Winnipeg to myself. I have shipped these last two years something like ten car loads of fruit to the Winnipeg

market, and I know this, that many of the people in our section who have shipped very largely up there positively refuse to let one pound of fruit go to Winnipeg unless they got their money before the fruit left the station. Now, those are the hard facts of the case. I do not believe that every fruit merchant and every commission merchant is a rogue, but I do say we have been rascally swindled by some of the people of Winnipeg. They have spread reports about the manner of packing our fruit, and about the condition in which it got there, and I have every reason to believe—and I say this with the feeling that I shall be reported in Winnipeg—that the reason the reports were sent out were simply that they might have an excuse for sending us a less return than they otherwise would. Now our dealings with Winnipeg this year were much more satisfactory than usual, because most of us said, "Show us the color of your money before we send the fruit," and in most cases they did so. The fruit that went up from our section to Winnipeg—and we appear to be a little better situated than you are here in Niagara District for shipping of small lines of fruit, I don't know why—went up, the most of it having been paid for before it left our section; and strange to say, there were no bad reports, or very few bad reports, of any carloads that were paid for before they got there; but as to any carload that went up there that was not paid for before it got there, there was the most terrible mess with that car—it was mildewed, rotten, poorly packed, and everything that was bad about it. (Laughter). I do not mean to say but what that there was some foundation for these reports of badly packed fruit, but I say it is not all the fault of the packing. I personally packed a very large number of cars of fruit that have gone to Winnipeg, and we have packed those in freight cars, it is very true. I might say in that respect that we like nothing better, having tried refrigerator cars, and they were not at all satisfactory. We have tried it over the Northern Pacific, the Canadian Pacific, and we have tried the ordinary grain car, and we found that the best results came from the ordinary C.P.R. car with open windows in each end. We packed the grapes, for instance, in 10-lb. baskets, packed them in two layers, that is in two baskets five high, then put a heavy platform that separated the next tier of five high. Those were all packed in so securely that they could not move in any direction, and yet not so close but that the air could circulate freely through it. You can easily see that those baskets were packed so carefully that not even the ingenuity of the trainmen could stir them from their position; and yet they were not so tightly packed but that when the car was in motion there was a current of cool air—especially when they got up north—constantly passing through these baskets, and they got up there in good condition, where we had an independent report of it. Now, I have seen those cars packed. With any information I have from years of shipping up there I cannot suggest any better mode of packing the baskets than the method which is adopted; nor can the merchants themselves suggest to us any improvement. We have asked them personally to suggest some way by which we could pack our fruit more satisfactorily, and there has been no suggestion that came down from them that has not been adopted that proved good, and I think it is time that these reports of the bad packing of the Ontario people should cease. (Hear, hear). With regard to tomatoes there is no difficulty whatever in shipping our ordinary tomatoes up there, and in those years when they have no crop up there—which is about three years out of five—it is a very profitable trade indeed; but it is a trade that is rather delicate to handle, because it requires considerable experience to select the tomatoes that are fit for shipping. In regard to peaches, they are a little more difficult to ship; but with regard to pears there is no difficulty whatever, and the people of Winnipeg this year I know personally were supplied with pears, ton after ton of them, from our own section, and the returns we made were about thirty cents per bushel. Now, if the people of Winnipeg are not satisfied with pears that return to us only about thirty cents per bushel, they cannot be very fruit hungry—and the very best of pears at that. However, let it be understood that we are extremely obliged to Dr. Saunders, who has always been one of the best friends of this Association, and we hope he will do more of this missionary work for us.

Dr. SAUNDERS: I suppose human nature is pretty much the same all over the world. We heard these reports this afternoon from even such good people as the British people, that under certain conditions the apples were all slacks, and I suppose there are

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such people in this country perhaps, and under conditions where they are tempted financially to do so they make things appear worse than they really are. However, I may say that in coming through Winnipeg about the end of August I spent a day there, and spent a good part of it among the fruit shops, and I was shown three cars of fruit that came from Washington that had just been opened up, and some from California. I was also shown quantities of fruit from British Columbia, and some from Ontario. I suppose Mr. McNeill in his remarks refers principally to apples.

Mr. McNEILL: I have been engaged more largely myself in grapes and pears.

Dr. SAUNDERS: I did not see any Ontario grapes this time. The market seemed to be bare of them just at that particular period. I must say that I saw some very fine apples exhibited there for sale, and they were getting five dollars a barrel for them and they were going off very rapidly. Just at that time also there was a large quantity of Duchess apples that had been sent from Ontario, that had evidently been very ripe when they were sent, and they came in there on a Saturday afternoon, and in order to get rid of them they were obliged to sell them at about twenty to twenty-five cents a basket, which would not return anything to the shippers; but they were so far gone, if they had not been sold at that price they would have been dumped out on Monday morning, showing there are two sides to this question. While I saw some very good fruit, I saw also some that should not have been sent in such quantity and so far gone in ripeness. The fruit from British Columbia also was very variable. I found in many packages of plums perhaps three or four large plums on the top, and then mixed through some that would not be more than half the size, and here and there a partly decayed one. Such fruit as that does not impress a buyer favorably. If you have got a lot of small apples, grade them and put the small ones all in one box. If a man buying a box of plums sees one or two large plums, he naturally thinks they all ought to be that size, and then he says, "These others are inferior." Many of those California and Oregon plums that I saw were rather small in size, but they were all the same size in the same box, and hence did not give rise to any question or thought in the purchaser's mind about being inferior. I have no doubt a large part of the discredit that has attached itself to the shipment of Ontario grapes in the Winnipeg market arises from the fact of their being sent forward by freight instead of by express. Freight cars will take six or seven days at least.

Dr. SAUNDERS: I have travelled up very often with an express car, and it is only two and a half days from Ottawa. Toronto would be about the same. Well, three or four days makes a wonderful difference to fruits of that texture when they are really ripe, and makes all the difference sometimes between getting them there in first-class order and very poor condition; and if you have ever ridden in a freight car,—I have had some of that experience, too much of it—and been subject to the jarring and jolting that nearly knocks you off your feet when the cars collide, you would not wonder at the fruit being mashed in four days of that kind of jarring.

Mr. McNEILL: But the fruit by express was put into exactly the same car, only it was attached to a passenger car.

Dr. SAUNDERS: Exactly, but the passenger train is not jolted about the way fruit cars are. When you have an opportunity take a ride 50 miles in a freight car, and you will be perfectly satisfied my remarks are not fiction. (Laughter.) I believe the plan that would lead the fruit-growers of Ontario to the greatest good would be to make some arrangement with the express people, and I fancy they would be just as approachable to the Ontario people as they are to the people of British Columbia, and it is far better to pay 2½¢ a pound to get your fruit through in good order than to pay a cent a pound and get it through in poor condition.

Mr. GREGORY: I do not believe it is altogether the fault of the growers or the fault of the commission men in Winnipeg why we do not receive better prices for our fruit. I believe one of the principal causes of that may be remedied if an effort is made by this Association. I think one of the crying evils of the fruit-growers of this country is the

kind of cars in which we have to ship our fruit to the Northwest Territories and other points. The railway people have promised various times to build us ventilated cars such as are required to successfully ship grapes and fruits of that kind to the Northwest and other distant points, and they have neglected or refused to do so to the present time. I believe it is practically impossible for us to ship fruit with the cars that are now being provided, as box cars are totally unfit for the service. I do not see why the railway people should not build cars the same as the Northern Pacific people have built for California. The industry has grown here to such enormous proportions that it certainly would pay them to provide cars of a suitable kind to carry the fruit. I believe there is something in the package, but with the package such as suggested by Dr. Saunders, placed in suitable cars, we can send grapes by freight to get them through for one and a half cents. Their being on the road four or five days will not deteriorate them. They go through in good condition if it takes them five days to go through. This Association could take steps to induce the railway company to build cars suitable for the through traffic.

The PRESIDENT: This discussion is getting very interesting, but I am sorry to be obliged to shut it off at this time, but it would not be courteous to Dr. Mills, of Guelph, who is to follow, if we kept it open any later at present. The hour is already advanced, and while I recognize the importance of this discussion I do not think we had better continue it to-night any longer, but to-morrow morning if any member wishes I will arrange it so that the discussion can be resumed. Meantime think it over, and if there is any way you can suggest by appointing a committee to attend to it, embody it in a resolution and then we will put it in practical shape. The Fruit Growers' Association are only too glad to do anything of that kind; that is, their work.

HORTICULTURE AT THE ONTARIO AGRICULTURAL COLLEGE.

BY DR. JAMES MILLS, PRESIDENT O. A. C., GUELPH.

President Mills, of Guelph, conveyed greetings from the Agricultural College and congratulated the people of Ontario on having so great a variety and such an abundance of delicious fruit. Few people, he said, were better off in that respect; and for one he could not forget the record made by Ontario in the fruit competition at the World's fair in Chicago—more points than Michigan, Ohio or New York, more even than California or any other state in the Union. Surely this was something worth recalling from time to time, and the facts of the case indicated how we should proceed in order to be successful in the future. Our natural advantages were not so great as in some states across the line; but the intelligence of Canadian farmers and fruit growers was of a high order, and that was the most potent factor in production. So our hope for the future must rest on the wise and thorough training of the rising generation. We could not change our soil or climate, but we could do much to increase the industrial skill and aptitude of our people. By general and technical education, we could make them more skillful, progressive and successful workers—better mechanics, stock raisers and fruit growers; keener, shrewder and more prosperous merchants and manufacturers. Much depended on the general education and special training of our young people. In general education, Ontario has done and was doing well; but in the matter of industrial training, she was far behind. He would like to speak on the need and importance of having a good industrial High School in each county; but time and place forbade.

A fruit grower needed to be an intelligent, wide awake man,—a man of good education who had learned how to use his head, his eyes and his hands,—a chemist, geologist, botanist and entomologist, a very keen observer and a man of sound judgment. The time had certainly come when fruit growers should understand the use of the microscope

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and be well versed in botany and entomology. The loss of crop from fungous diseases in the United States was from \$150,000,000 to \$200,000,000 a year. The proportion of loss from this cause in Canada was quite as great—from rust, smut, apple scab, black knot, pear blight, peach yellows, leaf curl, ripe rot, mildew, anthracnose, and many other diseases—all caused by minute vegetable organisms. How important, then, that farmers generally and especially fruit growers should be familiar with that branch of botany which deals with these low but very troublesome forms of plant life? The annual loss from insects, including San Jose scale, was perhaps greater, and it went without saying that fruit growers should be practical entomologists, men who know the character and habits of troublesome insects and could avail themselves of the best known methods of preventing their ravages.

At the College, they were giving horticulture more prominence than formerly. This was true as regards both teaching and practical work. Students of all the years had lectures, with a fair amount of practical instruction in fruit growing, vegetable gardening and greenhouse work. A new orchard had been set out, their vineyard has been enlarged and a great number of variety tests had been made. The tests during 1898 had been with 15 varieties of red raspberries, 15 of black raspberries, 9 of blackberries, 13 of currants, 13 of gooseberries, 219 of strawberries, 11 of tomatoes, 270 of geraniums, and 30 of coleus. The results of these tests would be found in the next annual report of the College. The department had a complete set of greenhouses with an extensive collection of plants for use in lecture room and laboratory practice. The work done was abreast of the times; and it had reached a stage when they thought that they might say that it was of considerable practical value to the students at the College and to farmers and to farmers and fruit growers throughout the Province.

The College and the Fruit Growers' Association conjointly had charge of the Fruit Experimental Stations of the Province. Two representatives of the former and four of the latter constituted the Board of Control. At present there were thirteen stations, and two more would be established after the next meeting of the legislature. The new stations would be in the northern part of the Province, one on St. Joseph's Island and the other on the Government Farm at Dryden, about eighty miles east of Rat Portage. These stations were doing excellent work for the Province in testing varieties of fruit on different soils and under different climatic conditions, and in preparing a description of the Fruits of Ontario, a most valuable work containing good cuts, and a clear, reliable, description, with the strong and weak points of every variety of fruit grown in the Province. The next annual report of the Board would contain this description as far as it had gone.

The Fruit Growers' Association had done good work for Ontario in testing varieties, giving information about planting and cultivation, and keeping the subject of fruit growing before the people; but he was inclined to think that it had not done all that it was capable of doing and ought to do in the way of finding satisfactory markets for the fruit of the Province. It was important to grow good fruit, but no less important to find good markets for it; and this latter part of the problem demanded the most searching investigation and vigorous action by the Association at the present time; for was it not a fact whenever there was a really good crop of any variety of fruit in the Province, it was impossible to sell it so as to make anything like fair returns for the labor and capital invested. The grower very often had to choose between being robbed by commission men and letting his fruit rot on the trees. Was it not so in the case of both small and large fruits? If one had a special or permanent market, it was his interest to look carefully after it; and he could give it direct personal attention; but most growers had to place their fruit on the open market or markets of the country and rely upon the machinery of trade to dispose of it. All such needed the help of some organization or association to look after their interests—to direct their attention to the best markets, negotiate for cheap, rapid and suitable transportation, and work for the enactment of such rules and regulations as would be likely to secure something like a fair and honest disposal of the fruit sent to commission men. What about the northern parts of Ontario, the Province

FRUIT GROWERS' ASSOCIATION.

of Manitoba, and the Province of Quebec? Could any of our fruit be disposed of in these places, without allowing express companies and commission men to absorb the whole product? Could information be given to fruit growers through the press or by private circulars as to markets during the selling season? Here was a field for some committee or individual to be appointed by the Fruit Growers' Association—here was room for the exercise of the best business talent in the Association; and he took the liberty of commending the matter to their prompt, earnest and most careful consideration.

The PRESIDENT: I am sure we have listened to Dr. Mills' address with the greatest of pleasure, and I quite recognize that the points he brought out are points that should be taken into consideration and acted upon in a vigorous manner by the Fruit Growers' Association. I may say that while we may not have done as much as should have been done in the past in that regard, it is only within the last few years that the subject has been impressed upon our minds that we had over-production in fruit. There are a great many difficulties to be overcome in carrying out the suggestions which Dr. Mills has made, and time will hardly permit of my answering it altogether at the present time, although before the meetings close I hope we will find time to have a little further discussion of that subject, because it is one of vital importance, and there are points to be brought out to show that the officers of the Fruit Growers' Association have not been negligent in this respect. One point I will call attention to, and that is the fact that we have not had in the past years at our command any money with which to go about or undertake the fight which Dr. Mills has suggested. It takes money to do that sort of thing, and also it necessitates the co-operation of every member of the Association. (Hear hear.) It cannot all be laid upon the Directors. You must understand, too, that the Association is only allowed a certain amount, and that it has devolved upon us to exercise the greatest of care as to every dollar we expend, and until we are in such a position—which we are rapidly obtaining, I am glad to say—we have not felt that we were able to undertake the contest that has been urged upon us; but I believe that before this meeting closes means will be taken to enter into this matter, and that good will be brought about. I am very glad that the Doctor has so emphatically brought the matter before the members of the Fruit Growers' Association; but I want to say to you, do not leave it all on the officers. It is in your power; it is to you that the hints were thrown out by the Doctor to bring before the Association every point that you can think of, and also bring results before the Association, and your officers will act upon them. (Hear, hear.)

The SECRETARY read minutes of last meeting held in Waterloo in December, 1897; also letter from Rev. E. Burke, Prince Edward Island; also letter from Winnipeg re Western Horticultural Society; also letter from M. M. Black, regretting that he could not supply the paper asked for; also from Mr. A. McD Allan, of Goderich, regretting inability to be present, he having been invited to speak on preparation for the Paris Exposition, 1900; also letters of regret from J. A. Morton, of Wingham, and Mr. Nicol, of Kingston.

The PRESIDENT: I am sure we are very much pleased to receive such correspondence, showing that the influence of the Society is extending to sister provinces.

The SECRETARY: I thought best this year, in order to give as much information as possible to all the members of our Association, to have a detailed account of the expenditures printed for distribution at the meeting. The premiums last year were larger and better than before, and a part of the money paid to Mr. Beall was due him for work done last year.

Mr. SCARFF (Woodstock) moved the adoption of the Report as read.

The motion was seconded by Mr. Murray Pettit, and carried.

Mr. A. H. PETTIT, as one of the auditors, read the Auditors' Report, finding a balance of \$784.96, to which the bank's voucher is attached. He moved the adoption of the Report, which was seconded by Mr. Orr, and carried. The Report is as follows:

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TREASURER'S REPORT, 1897-98

Receipts.		Expenditures	
Balance on hand Dec. 1, 1897	\$ 266 02	<i>Canadian Horticulturist</i>	\$1,941 87
Government grant	1,800 00	Salary secretary, editor and assistant..	1,200 00
Membership fees	4,147 13	Commissions	670 00
Advertisements	337 92	Premiums	455 78
Bound Vols. and binding	16 06	Illustrations	306 98
Back Nos. and samples	7 37	Affiliated societies, organization and lec- ture course	385 07
Miscellaneous	11 45	Directors' expenses	75
		Printing and stationery	13
		Postage and telegrams	138 86
		Committees	113 92
		Reporting	112 95
		Express and duty	45 50
		Auditing	31 00
		Collection and discount	27 24
		Book binding	26 45
		Care of rooms	3 00
		Balance on hand	784 94
	\$6,585 94		\$6,585 94

DETAILS OF EXPENDITURES, 1897-8.

CANADIAN HORTICULTURIST—	
Dudley & Burns, Toronto, November '97, \$163.78; December, \$134.07; Index '97, \$30.00; January '98, \$154.15; February, \$181.17; March, \$176.00; April, \$184.86; May, \$177.10; June, \$146.73; July, \$147.15; August, \$147.06; September, \$153.40; October, \$146.40.	\$1,941 87
SALARY—	
Secretary-Editor, Assistant and Treasurer	1,200 00
COMMISSIONS—	
December '97, \$20.83; January '98, \$49.80; February, \$20.95; March, \$24.00; April, \$24.60; May, \$32.60; June, \$8.50; July, \$1.80; August, \$4.95; September, \$184.35; October, \$247.10; November, \$61.00.....	670 00
PREMIUMS—	
Morris, Stone & Wellington, \$385.91; R. A. Nelles (postage for premiums) \$28.36; L. Woolverton, (cost of packing premium plants and trees) \$47.51.....	455 78
AFFILIATED SOCIETIES—	
Organization, Thos. Beall, \$170.90; Lecture Course, Wm. Bacon, \$51.37; M. Burrell, \$29.80; Wm. Gammage, \$22.50; G. C. Caston, \$6.95; A. McNeill, \$103.55	385 07
ILLUSTRATIONS—	
Grip Engraving Co., \$278.06; Gardening Co., \$5.80; Times Printing Co., \$5.05; <i>Globe</i> Printing Co., \$10.82; Stecher Lith. Co., \$5.25.....	305 98
DIRECTORS' EXPENSES—	
H. Jones, \$23.50; G. Nicol, \$20.35; W. Coulter, \$20.35; Thos. Beall, \$15.20; W. E. Wellington, \$6.00; T. H. Race, \$9.00; R. B. Whyte, \$23.85; A. M. Smith, \$6.50; L. Woolverton, \$8.00; W. M. Orr, (Kingston Meeting) '96, \$2.00; Zimmerman Hotel, Waterloo, (L. R. Taft) \$1.50; A. McNeill, \$15.70; J. S. Scarff, \$10.80; M. Pettit, \$11.90; R. L. Huggard, \$11.00	203 75
PRINTING AND STATIONERY—	
A. M. Millward, (Printing) \$109.75; R. A. Nelles, (Stat.) \$3.30; J. A. Livingston, (Printing) \$17.00; Wm. Forbes, (Stat.) \$1.20; Bunbin, Gillies & Co., (Stat.) \$1.20; A. F. Hawke, (Stat) 43c.; Martin Bros., (Stat.) \$1.25.....	139 13
POSTAGE AND TELEGRAMS.	
R. A. Nelles, (postage) \$99.70; Bell Telephone Co., \$13.25; G. T. R. Agent, (telegrams) 71c.; C. P. R. Agent, (telegrams) \$1.97; stamps transferred from cash, \$20.23.....	135 86

COMMITTEES—

W. M. Orr, (Tariff Guelph) \$7.05; W. E. Wellington, (San Jose Scale, Ottawa) \$21.10; A. H. Pettit, (Ottawa) \$23.05; M. Burrell, (Ottawa) \$29.55; E. D. Smith, (Ottawa) \$27.92; W. M. Orr, (Finance) \$2.15; M. Pettit, (Finance) \$2.10; A. M. Smith, (Finance) \$2.00.....

115 92

REPORTING—

Thos. Bengough

112 95

EXPRESS AND DUTY—

R. A. Nelles, (Express and Duty) \$41.19; J. S. Randall, (Freight) \$2.90; J. Blair, (Freight) \$1.91; L. Woolverton, (Cartage) 50c.....

46 50

AUDITORS—

G. E. Fisher, \$11.00; A. H. Pettit, (two years) \$20.00.....

31 00

COLLECTION AND DISCOUNT—

Bank of Hamilton, (Collections) \$8.79; Bank of Hamilton, (Discount) \$18.45.....

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BINDING "CANADIAN HORTICULTURIST"—

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CARE OF ROOMS AT ANNUAL MEETING—

I. Hoffman, (Waterloo).....

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We, the members of your Finance Committee, have carefully examined the accounts for expenditure made by the Secretary-Treasurer for the current year. And we beg to report that they were made in the best interests of the Association.

We have pleasure in stating that we found the accounts in perfect order for inspection.

Committee { W. M. ORR,
M. PETTIT,
A. M. SMITH.

REVISION OF THE CONSTITUTION.

Considerable discussion arose over the proposed changes in the constitution and by-laws. Amendments were made to articles 2, 4, 6 and 7 of the constitution, and clause 1 of the by-laws was amended and made article 9 of the constitution. A new clause was adopted as article 10. Clauses 3 and 4 were adopted as articles 11 and 12 respectively. A new clause was adopted as article 13.

Mr. RACE moved that the following clauses and the closing recommendation of the committee be adopted as amended, and that the clauses of the amended and revised constitution and by-laws be numbered consecutively from the beginning, removing all "constitution and by-laws" distinction. (Carried.)

The constitution and by-laws as amended are as follows :

CONSTITUTION OF THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

1. The Association shall be called "The Fruit Growers' Association of Ontario."
2. Its object shall be the advancement of the science and art of horticulture in all its branches and the encouragement of tree growing by holding meetings for the discussion of all questions relative to horticulture and forestry, by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem desirable.
3. The annual meeting of the Association shall be held at such time and place as shall be designated by the Association.
4. The officers of the Association shall be a president, vice-president, a secretary and a treasurer, or a secretary-treasurer, and thirteen directors and two auditors, to be elected at each annual meeting.
5. Any person may become a member by an annual payment of one dollar, and a payment of ten dollars shall constitute a member for life.
6. This constitution may be amended as provided for by section 32, subsection 1, of The Ontario Agriculture and Arts Act

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7. The said Officers and Directors shall prepare and present at the annual meeting of the Association a report of their proceedings during the year, in which shall be stated the names of all the members of the Association, the places of meeting during the year, and such information as the Association shall have been able to obtain on the subjects of horticulture and forestry in the Province during the year. There shall also be presented at the said annual meeting a detailed statement of the receipts and disbursements of the Association during the year, which report and statement shall be entered in the journal and signed by the president as being a correct copy; and a true copy thereof, certified by the secretary for the time being, shall be sent to the Minister of Agriculture within forty days after the holding of such annual meeting.

8. The Association shall have power to make, alter and amend By-laws for prescribing the mode of admission of new members, the election of officers, and otherwise regulating the administration of its affairs and property.

9. The Board of Directors at its first meeting shall appoint from among its own members or otherwise a Secretary and a Treasurer, or a Secretary-treasurer.

10. The President, the Vice-President and Secretary or Secretary-treasurer shall be *ex officio* members of the Board of Directors; and the President, or in his absence, the Vice-President an *ex officio* member of all committees.

11. The President, Vice-President and Secretary shall constitute the Executive Committee of this Association, whose functions it shall be to manage the affairs of the Association, to control the finances and make the necessary disbursements throughout the year, and to bring a report of the same before the Board of Directors at each annual meeting for approval.

12. The Directors may offer premiums to any person originating or introducing any new fruit adapted to the climate of the Province, which shall possess such distinctive excellence as shall, in their opinion, render the same of special value; also for essays upon such subjects connected with horticulture and forestry as they may designate, under such rules and regulations as they may prescribe.

13. The Secretary shall prepare an annual report containing the minutes of the proceedings of meetings during the year; a detailed statement of receipts and expenditure, the reports upon fruits received from different localities, and all essays to which prizes have been awarded, and such other information in regard to horticulture and forestry as may have been received during the year, and submit the same to the Directors or any Committee of Directors appointed for this purpose and, with their sanction, after presenting the same at the annual meeting, cause the same to be printed by and through the Publication Committee, and send a copy thereof to each member of the Association and to the Minister of Agriculture.

14. Seven Directors shall constitute a quorum, and if at any meeting of Directors there shall not be a quorum, the members present may adjourn the meeting from time to time until a quorum shall be obtained.

15. The annual subscription shall be due in advance at the annual meeting.

16. The President (or in case of his disability, the Vice-President) may convene special meetings at such times and places as he may deem advisable; and he shall convene such special meeting as shall be requested in writing by ten members.

17. The President may deliver an address on some subject relating to the objects of the Association.

18. The Treasurer shall receive all moneys belonging to the Association, keep a correct account thereof and submit the same to the Directors at any legal meeting of such Directors, five days' notice having been previously given for that purpose.

19. The Secretary shall keep a correct record of the proceedings of the Association, conduct the correspondence, give not less than ten days' notice of all meetings to the members, and specify the business of all meetings to the members, and specify the business of special meetings.

20. The Directors, touching the conduct of the Association, shall at all times have absolute power and control of the funds and property of the Association, subject, however, to the meaning and construction of the Constitution.

21. At a special meeting, no business shall be transacted except that stated in the Secretary's circular.

22. The order of business shall be: (1) Reading of minutes; (2) Reading of Directors' report; (3) Reading of Treasurers' report; (4) Reading the Auditors' report; (5) Reading reports of Standing Committee; (6) President's Address; (7) Miscellaneous business.

23. The by-laws may be amended at any general meeting as provided for by section 32, sub-section 1, of the Agriculture and Arts Act.

24. The election of officers shall take place at the morning session of the last day of the annual meeting in each year, the newly-elected officers to assume their respective duties and responsibilities at the close of the said meeting.

25. The reasonable and necessary expenses of directors and officers in attending meetings of the Board of Directors and Committees, shall be provided from the funds of the Association.

26. It shall be the duty of the officers and directors of the Fruit Growers' Association of Ontario to encourage the formation of local fruit growers' horticultural societies in affiliation with the Ontario Association.

27. On the receipt of such members, with the required fees, the secretary of such local affiliated society may transmit their names and post office addresses, together with the sum of eighty cents for each to the Secretary of the Fruit Growers' Association of Ontario, who will enter their names as members of the society, entitled to all its privileges, providing the initial number of such names be not less than twenty-five.

28. Each local society so affiliating with a membership or not less than twenty-five shall be entitled to a visit from some member of the Board of Directors or other prominent horticulturist once a year; it being understood that the railway expenses of such speaker shall be paid by the Ontario Society, and the entertainment provided by the local society.

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FRUIT GROWERS' ASSOCIATION.

29. The proceedings of such horticultural societies shall, on or before the 1st day of December of each year, be forwarded to the secretary of the Ontario Society, who may cull out such portions for the Annual Report of the Minister of Agriculture for the Province, as may seem to him of general interest and value.

30. Each local affiliated society is further expected to send at least one delegate to the annual meeting of the Fruit Growers' Association.

The Director of the Fruit Growers' Association of Ontario, for the Agricultural District in which such society is formed, shall be *ex officio* a member of the Directorate of such local society and receive notices of all its meetings.

BY-LAWS FOR AFFILIATED HORTICULTURAL SOCIETIES.

(Prepared by Mr. Thomas Beall and Mr. L. Woolverton, as ordered by the Board of Directors of the Fruit Growers' Association of Ontario.)

This Society, known as the Horticultural Society of the _____ of _____, organized under the provisions of the Agriculture and Arts Act of the Province of Ontario, Chap. 43, R.S.O. 1897, agrees to conduct its affairs in accordance with the several provisions of the said Acts, and with the following by-laws and regulations.—Sec. 13.

1. The members of this Society for any year shall be residents and ratepayers of this municipality to the number of at least fifty, and also others, who shall have paid one dollar into the funds of the society as membership fee for that year.—Sec. 7, s.-s. 1 (b).

2. The objects of this society shall be to encourage improvement in horticulture, and to secure to each member equal encouragement therein.—Sec. 9, s.-s. 2.

3. There shall be at least _____ public meetings in each year for discussing local horticultural matters, and for hearing lectures on improved horticulture.—Sec. 9, s.-s. 2, (a).

4. At any public meeting there may be an exhibition of such plants, vegetables, fruits and flowers as may be in season; and wherever such an exhibition is held, there shall be present at least one expert gardener who shall give such information and instruction appertaining thereto as may be required; but no prizes of value shall be offered for competition by the society at such meetings.—Sec. 9, s.-s. 2, (e).

5. The annual meeting, and all other public meetings shall be open to the public free of charge. But members only shall have the right to vote at any meeting.

(a) When exhibitions are held at such public meetings, the public shall be invited to exhibit such horticultural products as may be thought suitable for the occasion by a committee appointed by the Board to superintend such exhibitions.

(b) This committee shall take such means as they think proper to secure exhibits for the occasion, and also procure proper conveyance for collecting and returning the same free of expense to exhibitors.

(c) These exhibitions shall be open to members and other exhibitors free of charge.

(6) A sum of money not to exceed _____ dollars may be offered in prizes in any one year for essays on any question of scientific enquiry relating to horticulture.—Sec. 9, s.-s. 2, (d).

7. Each member shall be given by this society a free membership in the Fruit Growers' Association.—Sec. 9, s.-s. 2, (b).

8. There shall be procured for each member, trees, shrubs, plants, bulbs or seeds of new and valuable kinds in each year, sufficient in quantity to exhaust the funds of this society after allowing for necessary working expenses.—Sec. 9, s.-s. 2, (a).

9. The annual meeting shall be held at half past seven in the evening of the second Wednesday in January, when there shall be elected a president, a first vice-president, and not more than nine directors, who together shall form the board of directors. At this meeting, the society shall also elect two auditors for the ensuing year.—Sec. 7, s.-s. 1 (e).

(a) At this meeting, only those members who have paid their subscription for the ensuing year shall be entitled to vote.—Sec. 10, s.-s. 1.

(b) At this and all subsequent public meetings, ten members shall constitute a quorum.—Sec. 10 s.-s. 1 (e).

10. The board of directors at its first meeting shall appoint a secretary and a treasurer, or a secretary-treasurer.—Sec. 7 s.-s. 1 (f).

(a) Five directors shall constitute a quorum for the transaction of business.—Sec. 14.

(b) Subject to these by-laws, the directors shall have full power to act for and on behalf of the society and all grants and other funds shall be expended under their direction.

At each annual meeting the directors shall present a detailed statement of the receipts and expenditures for the preceding year, and also a statement of the assets and liabilities of the society at the end of the year, certified to by the auditors.—Sec. 11, s.s. (c).

11. The said statements shall, when approved by the meeting, be placed on permanent record in the books of the society, and such portions thereof, together with what is further required by sub. sec. (a) of Sec. 11, shall be sent within one month to the Department of Agriculture.—Sec. 12.

12. The Director of the Fruit Growers' Association of Ontario for the Agricultural District in which this society is situate shall be considered an honorary member and receive notice of the meetings.

13. These by-laws and regulations cannot be altered or repealed except at an annual meeting, or at a special meeting of the members of the society, of which two weeks' previous notice has been given by advertisement.

1. Stormont
2. Larnark
3. Frontenac
4. Hastings
5. Durham
6. York
7. Wellington
8. Lincoln
9. Elgin
10. Huron
11. Perth
12. Essex
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AGRICULTURAL DIVISIONS.

1. Stormont, Dundas, Glengarry, Prescott, and Cornwall.
2. Lanark North, Lanark South, Renfrew North, Renfrew South, Carleton, Russell, and the City of Ottawa.
3. Frontenac, City of Kingston, Leeds and Grenville North, Leeds South, Grenville South, and Brockville.
4. Hastings East, Hastings North, Hastings West, Addington, Lennox, and Prince Edward.
5. Durham East, Durham West, Northumberland East, Northumberland West, Peterborough East, Peterborough West, Victoria North (including Haliburton), and Victoria South.
6. York East, York North, York West, Ontario North, Ontario South, Peel, Cardwell, and City of Toronto.
7. Wellington Centre, Wellington South, Wellington West, Waterloo North, Waterloo South, Wentworth North, Wentworth South, Dufferin, Halton, and City of Hamilton.
8. Lincoln, Niagara, Welland, Haldimand, and Monck.
9. Elgin East, Elgin West, Brant North, Brant South, Oxford North, Oxford South, Norfolk North, and Norfolk South.
10. Huron East, Huron South, Huron West, Bruce North, Bruce South, Grey East, Grey North, and Grey South.
11. Perth North, Perth South, Middlesex East, Middlesex North, Middlesex West, and City of London.
12. Essex North, Essex South, Kent East, Kent West, Lambton East, and Lambton West.
13. Algoma East, Algoma West, Simcoe East, Simcoe South, Simcoe West, Muskoka, Parry Sound East, Parry Sound West, Nipissing East, Nipissing West, and Manitoulin.

R.S.O., 1897, c. 43, Schd. A.

ELECTION OF OFFICERS.

The report of the Nominating Committee was read by Mr. Race, and, on motion was unanimously adopted. The list of officers will be found on page 2.

COLD STORAGE OFFICIALS AND INSPECTION.

Mr. M. PETTIT moved "That the Secretary be authorized to communicate with the Montreal and Nova Scotia societies, requesting them to appoint one or more delegates to join a delegation appointed by this Association to interview the Government, and urge upon them the importance of appointing officers whose duties shall be to see that proper ventilation and greater care be given to the storage of apples and other fruit exported to Great Britain on ocean steamers, and that the Secretary shall make all arrangements and dates for meetings of such deputation." Mr. Pettit said: I regard this as very important work for this Association, and I believe if it is fully pushed, it will mean thousands of dollars to the fruit growers of this Dominion. This devil of Mr. Pattison's, that we heard about yesterday has one of his hiding places in the holds of these ocean steamers, and he can get up as much smoke, and steam, and heat there as any place else where it is found, and I think it is the duty of this Association to try and chase him out.

Mr. BOUTLER seconded the resolution.

The SECRETARY.—It seems to me that the object of that Committee might be a little bit enlarged. This Association has often asked the Government to do a little in the way of inspection of fruit for export. It appears to me that it is practicable to do a little in that line now, because we are beginning a new business in exporting fruit in cold storage, and it is quite practical that everything that goes in this cold storage compartment should be inspected by a Government official. As a matter of fact, it has been done already in a small way. The special shipments that have been already made have all been inspected by Government officials, and marked "Inspected Canadian Fruit," and I think, if that work could be made permanent, it would mark a new era in our export trade. It is very important that the Government should be asked to act in this particular. Of course, we do not expect that every package will be inspected—they do not do

that at the present time with our experimental shipments, but about one in ten is opened, perhaps one in one hundred, if you like, at random, but a sufficient number is opened to satisfy the inspector that the goods are up to the mark that is on the exterior of the package. We have certain grades which should be observed, and I think that every package should be guaranteed to be up to that grade, and it is very important that this Committee should be charged with asking from the Minister of Agriculture some provision in this particular. I do not suppose it is possible that all the outside general business of exporting apples in barrels should be thus controlled, as it would be too great an undertaking; but I think, in the special export trade in cold storage such as the Government has now adopted in cases, these could all be inspected, and it would be a great advantage to fruit growers to have all their fruit placed on the British market as inspected fruit. I would move that the words, "and to make provision for inspection" be also added to the objects of this Committee.

Mr. A. H. PETTIT.—You do not mean to make that compulsory?

Mr. BURRELL.—Do you think that an inspection of them by opening them up when carefully packed in tissue paper and so on would be advisable?

The SECRETARY.—Yes, I think just as soon as this special trade is thrown open to the public, a great many will put up fruit in improper shape. I do not know what provision could be made to prevent it, but I think we should ask the Department to make some provision.

Mr. HUGGARD.—In the resolution Mr. Pettit has just now presented, I think he hardly goes far enough in the way of invitation to these other societies to co-operate with the Committee appointed by this Association in the transportation of goods. Fruit growers know perfectly well that the rate of transportation, at the present time, is neither fair nor satisfactory.

Mr. BURRELL.—Excuse me, but I believe that question of transportation is coming up in a separate resolution.

Mr. A. H. PETTIT.—If the Secretary's clause in regard to fruit being inspected when sent forward means that the work will be entrusted to a man whom the Government might appoint to look after the shipment, and the matter made voluntary with those who request it, it could be accomplished, but to make it a compulsory matter would be a different thing.

THE SECRETARY.—I only ask that some provision be made for the inspection of fruit. I would far rather that all my packages of fruit should bear the inspection mark than have them shipped without that. I consider it a great advantage to me to have my packages marked "Inspected Canadian Fruit;" but I would like to know how it would be possible for me to do that unless there is a Government official to do it. It would be of no gain to the British purchaser to know that a fruit grower inspected his own package. If it is an advantage to me it is to every shipper to have some provision made by which, at some expense even—for I would not object to paying a small fee for the inspection of 100 packages—some provision should be made by which those who wish their goods placed on the British market as inspected fruit might do so.

Mr. BURRELL.—Does Mr. Woolverton think, for instance, that inspection will attain the ends that he imagines? My view of a Government inspection is that it is no good unless it is thorough—unless everything is inspected and inspected thorough. That is an impossibility, and if it is not thorough is it not almost valueless? Would it not be sufficient protection if every man was compelled plainly to brand his name on every package as it went on, instead of having a partial and therefore inadequate inspection? would it not defeat its own object?

Mr. M. PETTIT.—I have amended the resolution so as possibly to meet the views of the Secretary and others. (Resolution read as amended.)

The PRESIDENT.—I would suggest that you add "and branding." I believe every package of fruit sent out to any market, even the local market, should bear the fruit growers' name.

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Mr. BUNTING seconded the motion as amended.

The Secretary read the motion as finally proposed by Mr. Pettit, seconded by Mr. Bunting, which was put to the meeting and carried.

The resolution was as follows:—"Resolved, that the Secretary be authorized to communicate with Nova Scotia, Quebec, and other Provincial societies, requesting them to appoint one or more delegates to join the delegation appointed by this Association to interview the Government and urge upon them the importance of appointing officers, whose duty it shall be to see that proper ventilation and greater care be given to the storage of apples and other fruits exported to Great Britain in ocean steamers, and that the Secretary shall make all arrangements and dates for meetings of said deputations; and, further, this Committee shall discuss with the Minister the advisability of adopting some system of inspection and grading."

TRANSPORTATION OF FRUIT.

Moved by G. C. CASTON, seconded by M. PETTIT, that we the Fruit Growers Association of Ontario here assembled, believing that the transportation and marketing of raw fruits is the most important question affecting our Association at the present time, and that decisive measures to that end should be taken by our Association, hereby resolve that a Committee be appointed to be styled the Committee on Transportation and Markets, to be composed of the following gentlemen, viz. . . W. E. Wellington (alternate W. M. Orr), Alexander McNeill (alternate E. D. Smith), M. Pettit (alternate T. H. P. Carpenter), W. H. Bunting (alternate R. W. Gregory), and that an appropriation be made from the funds of the Association, the limit of which shall be fixed by the executive to cover the necessary expenses of the committee.

Mr. CASTON, in speaking to the resolution, said that the reason for appointing alternates was that something might occur to prevent a person nominated from attending and it would be necessary that the locality particularly interested in this matter should be represented, and therefore it was wise to provide alternates. There are a great many details with which this committee will have to grapple. It is an old saying that corporations have no souls, and large corporations will have to be attended to; also the question of fast freights. It will be necessary for this committee to get together before they interview the railway and transportation companies so that there will be unanimity amongst them. Then with regard to securing more favorable rates, the distinction between the short and long haul is something enormous in this country. The competition is all over now; the two railway companies have embraced each other. Then there is the question of re-icing cars. I am told by a gentleman here that the cars are re-iced at North Bay. That is not the place. I have known instances where the ice was all melted before they got to Winnipeg and the fruit was spoiled. They should be re-iced at Sudbury. Then the charges for icing are too high. In places where they have no cold storage the railway company should give a person a little chance. Where a man is willing to provide his own ice it is necessary for the fruit to be cooled down immediately it is picked before it is sent away. The railway company should give a person reasonable time to load, and for the fruit to be cooled down before shipping. One of the anomalies existing in the railway situation is that the competition between trunk lines is so keen that the business is cut down to small profits, and they calculate to make up for it on the short haul. I do not know whether this Committee can do anything in regard to that, but that is really the state of affairs, and the difference between the long and short hauls is simply outrageous in this Province.

The resolution was then put and carried.

REPORT OF COMMITTEE ON NEW AND SEEDLING FRUITS.

Prof. HUTT gave the report of the Committee on New Fruits as follows: Nearly all our cultivated fruits are variations or improvements upon some wild type. The many choice varieties of pears now grown in our orchards or gardens have been brought about by gradual development and improvement one after another upon a wild form, which Downing speaks of as the "most austere of all fruits, the chcke-pear of our fields, which seizes our throat with such an unmerciful gripe, really being a great improvement upon this wild species." These variations, or new varieties, as we call them, may arise in two different ways:

1. By bud-variation; that is, when a single branch develops some striking difference from the tree or bush upon which it is growing, an example of which we have in the Golden Queen raspberry, which is supposed to be a bud variation from the Cuthbert.

2. By seedlings. This is by far the most productive source of all our new varieties.

Whenever a seedling or bud-variation appears which is possessed of any particular merit, it can be propagated or increased almost indefinitely by such asexual means of multiplication as taking cuttings, layering, budding and grafting. But on the other hand when a variety so propagated is allowed to propagate sexually, that is from seeds, it gives all sorts of varieties, or as we say, does not "come true from seed." It is this constant tendency to variation, with the possibility of something of superior value appearing, that gives to the work of growing and fruiting seedlings such interest. To many persons it is a work as fascinating and as exciting as a game of chance, and as usually carried on it is but little more than such.

That there is so much uncertainty about it is because so few of the players understand the game or put any skill into it. The great variety of the new varieties introduced from time to time are "chance seedlings," or "fence-corner varieties," of unknown parentage, brought up without care, and if they come into prominence it is because their inherent qualities have attracted kindly notice. Some few are the product of seed which has been selected and planted, and the young seedlings cultivated and cared for till they come into bearing. In the production of such a variety some degree of skill has been employed, and knowing the variety from which the seed was obtained we have a partial knowledge of its parentage. But those varieties upon which the greatest skill has been bestowed are the offspring of crosses, where both parents have been wisely selected, with a view to combining or improving in the resulting cross some of their particularly good qualities. Of such breeding are the Roger grapes, the Ontario apple and the Dempsey pear.

We do not wish to discourage the growing and introducing of chance seedlings, for many of our choicest fruits can boast of no other pedigrees, but we believe that much more would be accomplished, in a much shorter time, if greater attention were given to plant breeding. Let him who has the time and taste for such work make a study of the laws underlying plant breeding; let him not go at it hap-hazard, and wait to see what may turn out, but let him get before his mind some reasonable ideal, and then go to work systematically and make his ideal a reality.

It is during years of the greatest fruit production that the greatest number of seedling fruits are brought to notice. The year 1896 will long be remembered as producing the greatest apple crop on record; and at our annual meeting that year nearly forty seedling apples were reported upon. The past season has, in some respects, been a fair one for fruit, yet it has not produced the abundance of other years, and the number of new fruits sent to your committee for inspection has been comparatively few.

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superior to named varieties of the same season, we do not think it is well to recommend that it be propagated and added to the already long list of named varieties. Hence there are but few of the seedlings which can be so recommended.

APPLES.

1897 SEEDLING APPLE. From Charles Swinnerton, Barrie, Ont., January 26th, 1898. A large, handsome apple. A seedling of Duchess of Oldenburg; much like its parent in appearance and quality, but a longer keeper. The tree, like the Duchess, is an early and heavy bearer.

D'ARCY'S SPICE OR BADDOW PIPPIN. Received from Dr. Wm. Saunders, January 24th, 1898, who received it from Ipswich, Suffolk, England. Mrs. Prof. Heaton, of the British Association, says it is an apple held in very high esteem in Great Britain. The apple is of medium size, with prominent ribs; color yellow, nearly covered with greyish russet; stem, short in a small round cavity; calyx, nearly closed in a shallow uneven basin, with five prominent crowns; flesh, white, crisp, juicy; flavor, rich, aromatic; condition, excellent. Scions of this apple were sent to Mr. A. W. Peart, Mr. Freeman, and Mr. W. H. Dempsey, and several were grafted at Gravenhurst. Mr. W. E. Wellington says, under date of January 28th, that the apple is so much like Sharp's Russet that he does not think it would be worth adding to our already numerous collection of varieties.

1897 SEEDLING APPLE, from Joseph Knight, Renfrew. Sample came to hand October 22nd, 1898. Has the quality of a first-class table apple. Fruit of medium size, beautifully shaded with bright crimson on the sunny side, and light straw colour in shade splashed and striped with light and dark red. Calyx closed in a small deep basin; stem, short and thick, in a small, deep cavity with five deep grooves, somewhat resembling the Scarlet Pippin; flesh, white crisp, tender; rich, peculiarly delicious, half-sweet aromatic flavour; season, October-December; quality, first-class for dessert.

SEEDLING APPLE, from James Rusk, Bracebridge, Ont. Received, November 1st, 1898. A large, handsome apple, most likely a seedling of the Duchess, as it somewhat resembles that variety in size, shape, and appearance. Quality, fair; season of maturity about that of Wealthy.

PEARS.

THE P. BARRY. This is one of the promising new varieties which has been before the public for the past few years, and is particularly valuable on account of its lateness. Mr. Woolverton received samples of it this year on August 3rd from Mr. F. W. Glen, of Brooklyn, N. Y., and makes the following remarks concerning it in the September number of the *HORTICULTURIST*:—"At first we thought it like *Beurre Clairgeau* kept over in cold storage, for it resembles that variety much in form and size. It is a winter pear, ripening in April, very large; orange yellow when ripe; juicy, fine grained, and of high flavour. Perhaps this will prove the very pear we want for export to Great Britain in cold storage." It is now on trial at two or three of our Experimental Stations, and will be reported on later.

PLUMS.

SEEDLING PLUM, from A. W. Peart, Burlington, Ont. Known in the Burlington district as "Ireland's Seedling." We have noticed this plum in Mr. Peart's orchard for two or three years past, and he has given us the following notes concerning it:—"Fruit, medium sized, nearly round, distinct suture, reddish purple, thick bloom, juicy and rich; stone very small, flesh adhering slightly to it; season, last of August (this year exceptionally early on account of drought); midway between *Ogon* and *Bradshaw*; has tendency to rot as it ripens, and, therefore, has to be picked when firm." Tree, spreading; moderate grower; close jointed; blossoms tender, variable in productiveness. In this district, a crop perhaps once in three years; not as satisfactory and as sure a cropper as some of our standard sorts. Its extreme earliness insures fair prices.

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SEEDLING PLUM, from David Matheson, Ottawa, Ont., who suggests that, if it is entitled to a name, it should be called "Ooob," after the man who grew it. Mr. Woolverton gives a photograph, and the following description of it in the October number of the HORTICULTURIST:—"A plum of good size, measuring two inches long, $1\frac{3}{4}$ inches in width; somewhat one-sided, with a very distinct suture on one side. In form it is somewhat broadened towards the apex. The stem is short, about half an inch in length, inserted in a shallow cavity. Colour, a very dark red, with greyish bloom. Flesh, greenish yellow, moderately juicy, soft of texture, moderately sweet. Quality, very good for cooking and market purposes. Season, late. Sample photographed came to hand September 10th."

PEACHES.

SEEDLING PEACH.—Raised by Dr. Stewart, 152 Dowling Ave., Toronto, and on exhibition at the Industrial, Toronto, September 9th, 1898. As shown in the accompanying photograph, this is a large round peach, measuring about three inches in diameter. The skin is light yellow with red cheek; flesh, yellow, firm, of good quality; freestone of the Crawford type. Originating in Toronto it may be that the tree will be hardier than Crawford; at all events it is well worthy of trial. Buds were secured by Mr. A. M. Smith, St. Catharines, who is propagating it. This seedling will be tested as soon as possible at a number of our Fruit Experimental Stations.

SEEDLING PEACH.—Grown by Mrs. Fairbrother, 119 D'Arcy St., Toronto, and was exhibited at the Industrial, September 8th, 1898. A large, handsome, yellow peach, with bright red cheek; flesh, yellow, juicy and of good quality; freestone; season of early Crawford. Worthy of trial.

SEEDLING PEACH, No 1, from R. T. Smith, Hamilton, Ont. Upon this Mr. Woolverton makes the following note in the September number of the HORTICULTURIST:—"A sample of this seedling was shown us on the 25th of August, at a season when good peaches are very scarce. 'Hale's Early' was just over, and 'Honest John' not yet ready. It is large, with beautiful bright red cheek; has a distinct suture, a deep cavity and quite a depressed apex. The skin is easily removed without a knife. The flesh is white, very tender, sweet, rich and very juicy. A freestone and capital dessert peach."

SEEDLING PEACH No. 2, from R. T. Smith, Hamilton, Ont. The following account of this is given in the October HORTICULTURIST:—"On September 27th Mr. R. T. Smith, Hamilton, showed us another fine seedling peach of about the same season as Steven's Rareripe, and just in advance of Smock. It is very large in size, 3×3 inches; almost round in form, with distinct suture; skin, yellowish green, with dull red blush on the sunny side; flesh, tender, juicy, fairly sweet; freestone. A first-class dessert peach, and one which on account of its large size should be valuable for market."

SEEDLING PEACH, grown by Mr. M. Fitch, Grimsby. Sample shown September 13th, 1898. The following account of this appears in the October HORTICULTURIST:—"A beautiful peach, quite equal to Early Crawford in appearance, rounder in form; size, $2\frac{1}{2} \times 2\frac{1}{2}$ inches; yellow, with deep red blush on sunny side, and partially suffused with red in the shade; down very perceptible to the touch; skin, thick and easy to separate from the flesh; flesh, yellow, fine grained, juicy, but not quite so much so as Early Crawford, melting; flavor, luscious; quality, first-class for dessert or canning; value, first-class for market, and probably a better shipper than Crawford; season, September 10th-15th, immediately succeeding Early Crawford. A seedling worth testing"

SEEDLING PEACH, from Mrs. J. T. Ross, King St. East, Hamilton. Received October 20th. Medium in size ($2\frac{1}{2} \times 2\frac{1}{2}$), greenish yellow skin, with faint coloring of red; moderate down; deep and narrow cavity; distinct suture; flesh, dark yellow, juicy and of good quality; freestone; season, late in October. Promising as a late variety.

GRAPES.

SEEDLING GRAPE. Grown by W. Bachus, St. Catharines. On exhibition at Industrial, Toronto, September 6th—10th, 1898. In size of bunch and berry, this seedling is about the same as Concord; in color it is like Niagara; quality, excellent; very early, about the season of Moore's Early. Worthy of trial.

SEEDLING GRAPE, from O. F. Wilkins, Bridgeburg, Ont. Received September 12th, 1898. Bunch of good size and form; berries, white, round, of medium size; flavor agreeable, somewhat foxy, but much sweeter and pleasanter than Concord; skin thin and tender; pulp, tender and separates readily from seeds. Is said to ripen with Early Ohio. Worthy of trial.

CHERRY.

SEEDLING CHERRY, from John Gormley, Pickering, Ont. Received July 22th, 1898. The following note on this seedling appeared in the August Horticulturalist. "On page 317, Vol. 20, we referred to this cherry as being of great promise. To-day, July 12th, we have received another sample lot, and consider them even superior to those received a year ago. Being of Canadian origin, no doubt the tree is very hardy, and would succeed over a wide extent of country."

"The color is bright red like the Montmorency; the form about that of the English Morello, and the flesh like that of a Bigarreau, not very juicy; it parts easily from the pit, without dropping its juice; flesh, yellowish; a wonderful keeper, and therefore a good variety for distant shipment, Mr. Gormley writes, 'This is a seedling cherry-tree about 25 years old. I remember the tree coming up in a fence corner. It has never had any care, but has grown well under neglect. I would like to know if it is very valuable, as the quality cannot be excelled, and it bears every year'."

Mr. MORRIS. I would like to make a suggestion. That Report deals only with the seedlings of this country, and I suppose there is not one in a hundred that is worth propagating. Now, I think that it would add to the usefulness of the Committee's work, if they would extend their operations, and get every new fruit that nurserymen are offering for sale and report on them. I think that would be information that would be worth ten times more to this country than information on seedlings that are never grown afterwards or anything done with them. I think if they were to report on new fruits that nurserymen put in their catalogue it would give people information and a guide in the way of planting that would be valuable.

Mr. HUTT. That is a work of great value, which we are trying to do at our fruit stations. These are being tested. It would be difficult to get fruit of all these varieties. We might see a variety advertised in a nurserymen's catalogue, but the difficulty for this Committee would be to get a specimen of that so that they could pass on the fruit itself. We simply took note of any new Canadian seedling that came to our notice during the year.

Mr. MORRIS. Of course the work is very good that is being done at these experimental stations, but perhaps it will be six or eight years before we can have those fruits put on our lists. I do not think it would be difficult to get samples of any new fruit that is offered for sale by nurserymen. Perhaps the greatest hybridizer and the most successful that has ever been on the continent is Burbank, of California. He sends samples of his new plums to parties east whenever they are requested, particularly of this Japan class, and there is quite a number of new varieties coming up, although not even in the nurserymen's catalogue.

The SECRETARY. I am sure that the members of this committee are always pleased and glad to receive samples of new fruits that are grown by nurserymen that are sent to them. We shall always be pleased to receive them, and quite ready to report on them as well as on any other fruits that are sent in by any private individuals who grow them. I would move the adoption of this report for publication.

Mr. HUTT seconded the motion which was carried.

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GRADING FRUIT AS TO SIZE.

BY E. H. WARTMAN, KINGSTON, ONT.

The grading of fruit as to size has been one of the chief difficulties of packers. Having no standard to go by, but eye measurement, it is not to be wondered that we have so much irregularity in fruit grading; and that we find stunted, medium and superior size, all in the one package. But as the trade has recognized brands, designated XXX, No. 1 and No. 2 and have so often been disappointed, finding some packers of No. 2 equalled by other brands marked No. 1, and many a No. 1 not equal to another packer's No. 2; the question is asked, how can we remedy this state of affairs. The remedy as to sizing all kinds of fruits properly, is simple, if the means are provided. At present there are fruit graders on the market, that will do the grading as to the size required in a most perfect manner, at perhaps a cost of 1c. per bbl. Each barrel is designated by a standard grade brand 2, 2½, 3 or 3½ inch diameter grade, or any other size that may be required. These fruit graders are durable and cheap, and when fruit sized by them is put on the market it will bear being poured out and a striking uniformity is at once noticed. By the use of these machines, we do not propose to say to the growers that we will not take their small fruit. We will be glad to get it and mark it as to size, and it will demand its relative price. But we must remember that in a year of an enormous crop we must set our standard higher than in a year of scarcity. Let a 2½ inch diameter apple be the smallest size put on the market in a plentiful season, so that thousands of barrels being screened out, there will be a tendency to keep our markets steady. There are other ways of using our small apples more profitably than stuffing the centre of packages with this inferior grade. This imposition and fraud should be a thing of the past. Facing with large beautiful fruit, and putting inferior sizes in centre of packages, has been in vogue long enough. Buyers no longer credit barrels or boxes as to top facing, or being true to size throughout, but always pay a price for a second class size to be on the safe side. If these beautiful facers, top and bottom, were put in cases by themselves and marked as to grade, they would bring the top price in the market, whereas, used as they are, they only bring a second class price.

Some may say, "Sizing is very well, but what about color and fungus spots?" If apples are generally affected by spots, growers cannot afford to throw this class away; but grading this class to uniformity of size makes it very much more valuable to the trade. As to off color, if fruit is graded according to the scale, this class is not objectionable and will find a ready sale. In my experience of packing and shipping fruit for the last 25 years, the sizing has more often brought my stock into good repute than any other cause.

In trying to make sale of fruit, where you have no sample, the first question usually asked is, "How is your fruit for size?" If graded by a proper grader, and marked accordingly, how easily and truthfully is this question answered! I have a 100 bbls. Golden Russets 2½ inch diameter grade. What does this mean? That there is not one apple in the 100 packages under this diameter. Is this not more satisfactory than saying they are a fair size, or average sample? For what one man may think extra, another may only call ordinary. The question of rebating on fruit not up in size and quality would be disposed of and all parties would be more satisfied with this way of grading as a more profitable, scientific, etc., up-to-date method.

For packers to say they can divide their fruit into two sizes by eyesight and draw the line as to size correctly is a mistake. You are always running too far towards small sizes and dropping culls in with your best grade. Large size mixed with culls was a very common occurrence in the old guess work style of grading. Graders relieve the eye of the task of measuring, so that the eye service can be devoted to picking out or detecting defective fruit, which no machine can dispose of. Our old country market demands our best graded fruits. Our Canadian shipments have often been spoken of as inferior as to size, or as not strictly high class. Now, as we are living in the best province in the

world for high class fruit, why not have our best apples put up in the best manner of grading, as well as put up in the best package for our English or foreign markets? And by so doing we will hold our own in all competition with other countries, and bring to ourselves much credit as well as large profits. While eighteen days in Glasgow, Scotland, watching auction sales of our Canadian Apples, I never saw our red varieties that were well graded sold at a low figure; always at from 15 shillings and upwards. But our yellow and green are not so much in favor. In competition for a prize for the best 12 apples or any other class of fruit, one strong point is in favor of the lot that has been graded as to uniformity of size and color. If size is uniform throughout the package, the same price can be obtained per peck or dozen, throughout package, relieving the merchant the trouble of grading after his purchase arrives in stock. It is hard to determine what a package or barrel of ungraded apples, as to size will realize a merchant, when put up by careless packers. As a proof that grading as to size combined with quality demands attention as well as secures top prices in Glasgow, I may say that a lot graded in this manner brought me a profit of over 100 per cent. The brokers who sold them, in sending my returns said, "Your grading as to size is a phenomenal success, and if you had sent them to our house in London your profits would have been larger." Some would say putting all even sized large apples together it would be impossible to keep them tight. But my experience in shipping Cabashea apples to London is to the contrary. Very large, even sized apples were opened in that city by myself and found perfectly tight and brought the top price in the market. I admit that this class are harder to keep tight than mediums, but long years of experience can overcome this difficulty. I have shipped to Glasgow in quantities with returns of only 4 per cent slack.

In conclusion I would say, that for export, never ship apples of any sort under $2\frac{1}{2}$ inches in diameter; and apples that generally grow larger, such as Kings, Spys, Greenings, etc., grade 3 inches in diameter, and you are most certain of success, as these sizes denote superior growth and will not cost more to export than inferior sizes. We, as fruit growers, packers and shippers, must remember we are living in an age of progress. We understand how to grow fruit and the kinds to grow for profit; but I am inclined to think as to packages and grading, we will, in the near future make long strides in the right direction, which will be a boon to growers as well as shippers and packers at large. At all times let our motto be:—

We'll pack our best fruit,
In uniform size,
Never let top or bottom
Beguile or tell lies.

The SECRETARY: I have been sizing my pears this year. I sent 400 or 500 cases of Bartletts to Great Britain this year, and graded them all for size. What we call No. 1 grade was the lowest grade of pears, and they were uniform from $2\frac{1}{4}$ to $2\frac{1}{2}$ inches in diameter. That meant just 100 pears in a case; you can put no more and no less than 100 in a case, so any one buying that package would know exactly how many pears he was getting. The next grade, A No. 1, measured in diameter $2\frac{1}{2}$ to $2\frac{3}{4}$ inches. That took just eighty pears to a case. Extra A No. 1 was three inches in diameter and took just sixty pears. On our apples a similar rule was observed. No. 1, $2\frac{1}{2}$ inches, average about eighty apples; A No. 1, 3 inches, about sixty apples; and Extra A, $3\frac{1}{2}$ inches, 48. I believe it is going to be more and more an important thing to size our apples. Whether we do it with a grader or not, we must have some way of making the grade uniform.

JUDGES OF FRUITS AT FAIRS.

Mr. RACE read the Report of the Committee of Fruit Exhibit, giving a list of competent Judges at Fairs, copies of this list to be sent to the Boards of the various Fairs.

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Your Committee would recommend as competent judges on fruits at the agricultural fall fairs throughout the Province of Ontario the following :—

On Apples.—T. H. Race, Mitchell ; A. Mc. D. Allan, Goderich ; G. C. Caston, Craighurst ; A. H. Pettit, Grimsby ; E. Morris, Fonthill ; Dr. J. Harkness, Irena ; Henry Robertson, Morrisburg ; Harold Jones, Maitland ; H. A. Brouse, Ottawa ; Walter Dempsey, Trenton ; W. A. Whitney, Iroquois.

Pears and Plums.—A. Mc. D. Allan, Goderich ; A. M. Smith, St. Catharines ; A. H. Pettit, Grimsby ; Dr. Beadle, Toronto ; Chas. Van Duzer, Grimsby ; R. L. Huggard, Whitby ; E. O. Beman, Newcastle.

Grapes and Peaches.—M. Pettit, Winona ; W. M. Orr, Fruitland ; Alex. McNeill, Walkerville ; E. J. Woolverton, Grimsby ; W. W. Hilborn, Leamington ; A. M. Smith, St. Catharines ; Walter Forward, Iroquois ; W. A. Whitney, Iroquois.

Mr. CASTON : I suggest that this report be accepted as read.

THE LITTLE PEACH.

Mr. CARPENTER asked if any of the gentlemen knew anything of the new disease affecting the peaches seriously through the United States, particularly in Michigan. It is called "The Little Peach." I cannot find out any cause or any remedy. I have had a tree that had it last year similar to what is described in some of my papers in some very large orchards in Michigan. I noticed a few peaches on one tree. They ripen before they should naturally ripen, and they are very small, perfect in appearance in every respect with the exception of the kernel. I do not know whether they destroy the tree or what is wrong with it. I see by the papers they are cutting down large orchards of trees in Michigan just from this source ; and it was stated through the papers that some people supposed it to be this rosette in the peach, but it was denied. I have seen the rosette myself, and it is nothing like it.

Mr. PETTIT : I would suggest that our Secretary give us any information that he may gain through the "Horticulturist." I fancy we will not be able to gain any more information here to day.

CO-OPERATION IN FRUIT SELLING.

By MR. ALEX. MCNEILL, WALKERVILLE, ONT.

I do not propose to take all the time that in justice might be allowed to this subject, because there are other papers that must be heard, and I hope to reach you through the columns of the "Horticulturist," but I can assure you that this matter of co-operative selling is one that has been forced upon us, and one that must receive attention, and I hope that I at least will have the co-operation of my fellow fruit growers in this mode of selling. Co-operation is absolutely necessary in many things, but it is a good thing in almost all our fruit growing associations. It is unnecessary for me to point out the many advantages of it. In other lines of business co-operation has been found successful, and certain branches of farming have been almost created through this spirit of co-operation. Dairying, as we call it now in Ontario, would be almost an impossibility were it not for co-operation ; and that same spirit that has been so successful in connection with the production of cheese I believe can be introduced among the fruit growers and be equally successful there. Now it is an appeal for the development of this spirit of co-operation that I make here this afternoon. It is very true that to devise any system, any mechanism by which this co-operation can take place with regard to the selling of fruit, is somewhat more difficult than in other branches of agriculture ; but I am perfectly certain that with the intelligence we have represented in this profession it is not altogether

impossible. I am sure that among us we can devise some scheme that will be practicable for us under our conditions. Of course it would be an easy matter for me to cite cases where co-operation has been successful among other people in the matter of selling their fruit. The peach growers in the nation to the south of us have long adopted this method in various sections of the country as a means of disposing of their productions, and it has been the universal testimony that where these co-operative associations have been worked with any degree of intelligence they have been successful. The peach growers of New Jersey and Delaware would think it almost impossible to conduct their operations now were it not for co-operation; and I am sure we are all familiar with the great co-operative selling concerns of the fruit growers in New York State and Northern Ohio. The co-operative societies of Michigan have not been quite as successful as those of their eastern brethren, but even the Michigan men claim that co-operation in selling has been an immense advantage to them. The fruit growers of California, particularly the grape grower, found that grape growing could be begun a few years ago only at a loss. Grapes are cheaper there even than they are with us, and though we are suffering now from the effects of growing grapes at half a cent a pound, they were even worse than that at California; but due almost solely to the efforts of these societies the grape growers have forced grapes during this last year and 1897 to a very fair price—\$21 a ton, I believe, was the average price in 1897, and I believe they realized quite good prices this year, almost solely through the efforts of co-operative societies. I cite these cases simply to show that co-operation is possible with other people, and though the exact mechanism they have adopted might not suit our needs, I believe we have that within us that will enable us to devise the means that will suit us. The suggestion that I would make here this afternoon is that the different localities should be organized into associations, without any great amount of red tape or formality, but simply that the growers of a neighborhood should unite and appoint from among themselves a seller or a manager of the association, and should as largely as possible sell through this certain manager. Now that is just the plan in its bald outlines. There can be any mechanism introduced that you wish. You can incorporate if you think it necessary. It is not necessary at all, and associations of that kind are conducted in different parts of the continent without any formality except simply a meeting of the neighboring growers who ship from a certain railroad station, and who sometimes appoint a manager who is given power to sell their fruits. At other times the business is put in the hands of a committee of three or five whose business it is to meet the buyers and to arrange sales and other business of that sort; and I believe that that can be done here, and we have concluded in our section to try this process next year, and we are willing to put our fruit in the hands of a manager. We are limiting it for next year to a special class of fruit, which are grapes, because the grape growers are not perhaps as numerous as the growers of other kinds of fruit, and they are grown in larger quantities by each individual grower. While there is an immense quantity of grapes grown in the aggregate in our section, the number of growers is comparatively few, so that the circumstances under which we co-operate are somewhat favorable. We propose to place the selling of our fruit in the hands of a certain individual under the direction, so to speak, of a committee of three of us, and all sales will be made through this manager and committee. We have drafted out a simple schedule on which we propose to have patrons—that is, those who unite with us—agree to give us the selling of this particular kind of fruit. It reads simply this way: "I hereby agree to place (naming a certain quantity of fruit) in the hands of this association for sale." The object of that is to know exactly how much we have to dispose of. We are acquainted with each other very largely, that is one of the essentials of this co-operative business. Our local associations are supposed to know the needs of each individual member, and as far as possible we unite in this matter for the sake of securing several objects: largely for securing better prices, but incidentally there will be other advantages—less competition among buyers, for one. Now in every neighborhood there are certain advantages that induce buyers to come. Buyers come to our neighborhood to buy grapes, perhaps not because we have better grapes there than anywhere else, though we claim to have, but buyers have the advantage of a number of growers of grapes in one neighborhood, and they come here to play off one grower against another. As a

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matter of fact I have evidence, which I submitted to my fellow growers after a transaction was over, that one of these large men from Winnipeg simply played off four or five of us in that way. He came to me and had an offer for grapes, asked me at what price I would put in my entire crop of grapes, which I estimated to amount to sixty tons; and I made him an offer of \$25 a ton in 10 lb. baskets. I am rather ashamed of the price; certainly we should not have to take such a price for our fruit; but it was the best we could get, and in my judgment, considering the competition all around me, I think \$25 was the highest price I dared ask. He asked me if I would not take something less than that, and when I demurred a little he said, "Well, I will see you again before I leave," and I knew exactly what the process was going to be. He was going to my neighbor, Mr. Murgatroyd, and making the same offer and telling him that Mr. McNeil was going to take \$25, would not he go \$24? And Mr. Murgatroyd did what I would do under the circumstances—he took \$24. Then he said to Mr. Murgatroyd that he would see him before he would leave. Then he went to Mr. Bennett, another neighbor, and Bennett agreed to put them in at \$23. Then he came to me and said, "I would rather have these if you can put them in at a trifle under \$23;" and I said, "I will go it at \$22— (laughter)—and \$22 I got. Now, that is the history of an actual transaction, not a freak of my imagination. I did not see him with the physical eye travelling around to these people, but I could trace him just as distinctly as though I had been following him around, and he came to me and saw me before he left, and he got satisfaction. If I could have paid my creditors dollar for dollar he would have squeezed me down a few cents less, but I thought I could not pay dollar for dollar at anything less than I took. There were certain advantages by buying from us that he could not get from any other people. For instance, he thought he could get a carload upon short notice. The agreement was that we should ship him a carload within twenty-four hours of his telegram, so that if he telegraphed this morning for a carload, ten tons, we expected to have it start to-night for Winnipeg. If we had been together I would have said, "The selling of this is in the hands of Mr. Murgatroyd." Mr. Bennett would have done the same, and Mr. Ferry would have also sent him to Mr. Murgatroyd. If he had that kind of a deal to go through then there would not be the competition of one against the other; he could not play one off against the other in that way, so that there will be that advantage in this co-operation. Another advantage would be the lessening of the cost of sales. There are a certain number of expenses that must be undergone by each individual man. If I am selling a certain quantity of stuff I have to have telegrams to know the state of the market each day. These telegrams do not differ essentially. One would have done for the whole or half a dozen; and there is a certain amount of correspondence, and when you sell a large quantity of fruit correspondence becomes a serious matter. Most of us have not only to conduct the correspondence, but get out into the field and hustle during the shipping time, and we cannot delegate this matter of packing fruit to anybody else, and the correspondence in selling the ordinary crop of fruit is a serious matter, which might be lessened considerably by co-operation. Then this co-operation, even in this small way, would give us much better accommodation with the railway companies in the matter of cars and so on. That is a larger subject that I need not dwell upon. We all know that even where a dozen people are gathered together and are unanimous in demanding one thing they can secure what no individual or all the individuals acting individually could secure from the railway companies and truck companies and others with whom they deal. Each locality, too, has a certain market. Now, that market can be enlarged to a certain extent, but it is just possible it may cost considerable money to enlarge the market. Those of us who have tried to extend the market for our fruits have found that it did cost money to increase the market, and this increased cost could be materially lessened even by this small co-operation of each neighborhood that I speak of. It is a little too much to expect one man to open up a new field. Take, for instance, the northern part of Ontario. Some years ago I spent considerable money and time in opening up what I thought was a new market there, and I no sooner got a profitable trade—and I think I was the first person, certainly the first in our particular neighborhood, to take advantage of a certain freight rate that gave me access to three splendid towns, and I got a freight rate really where they had always been in the habit of paying

express rate—but no sooner did I get that thing and spent considerable time and money in getting arrangements completed that all my neighbors had the advantage of the whole thing without any effort on their part. I think I am a generous individual in most cases, but I thought it was a little hardship in that case, and I think co-operation would have been the grand thing if nothing more than to share the expense in such matters as these. Those who have had experience of this character are deterred sometimes from making these ventures on account of the expense; but when we know that the expenses were shared by the community it would pay the community handsomely to undertake to open these new markets. These are only a few advantages of co-operation. There is another very important one—it would secure greater uniformity in the packing and grading of fruit. When these co-operative methods are adopted it is positively essential that there should be some understand in regard to the quality of the fruit; and the fact is, as some would say perhaps that now we grade the lower and grade down, but then the poorer fruit would be thrown out and nothing but the better class shipped; the tendency of the grading is always upwards in these co-operative associations and not downwards. That I consider a very important thing. The reputation of the association as such cannot be shirked so readily as that of the individual sometimes, because the whole mechanism is right at the criticism of the public. I would like to dilate further on the advantages of co-operation, but my object this afternoon is rather to open up the discussion and bring the thing before the members of this Association and see whether we cannot stir up a sentiment in favor of further co-operation. Of course you see that my object here is to endeavor to control the fruit at the shippers' end. Now it is a pleasure for me to say that the Niagara District Stock Co., a co-operative concern, has done a great deal for the fruit growers in one way or another; but they have commenced at the wrong end a little. They deal only with the sellers' end. Now, if these co-operative societies and associations could work in conjunction with that, there we have a mechanism by which we can control the fruit at the shippers' end, and it is the only possible way of preventing gluts in the market. Unless we know and have some means of finding out what to be shipped and where to be shipped to, we have no means of preventing gluts in the market; but if this Convention should take up seriously this matter of co-operation just as it has been taken up in the Dairymen's Association in connection with their cheese factories and creameries, we could make this matter so general that in a very few years we could develop a system of selling fruit by which we could control almost completely the shipping of fruit, so that no market would be over-supplied with fruit and no market would be under supplied. Now, I am sure there is not a fruit grower but feels that is a consummation devoutly to be wished; and I feel certain, if we can only induce the various members to think about this matter, to read what is said about co-operative methods, and to so school themselves morally that they can work with their neighbors, much can be done by this Association in that direction. Old Dr. Johnston said, "There are some people that are so unclubable that it is almost impossible to work with them." Let us introduce the missionary and the Sunday-school and educate our neighbors to work co-operatively, and we have done a good thing. We can work co-operatively with success when we give it attention. I do not believe it is going to come suddenly—no good thing ever did—and I should depreciate a boom in co-operative societies of this sort, because then mistakes would be made; but let us proceed slowly, let us see how one works this year and then proceed along several years improving year by year to work steadily for this particular object. I am sure any of you who have read broadly along these lines must believe along with me that co-operation must come into our farm operations before we can get the benefit of our labors. We are sure that the ground principles are right. The only thing is the mechanism by which we can secure them. If we believe the general principle is right, it is our business as members of a community, as an association, to work for them carefully but energetically; to avoid the errors that we may see each year and improve for the year to come; not to go ahead with the possible chances, with the certainty almost, of making very serious mistakes on a large scale, but to proceed cautiously and work towards the end, not discouraged by minor failures, but to proceed along the line knowing that we are right and

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going ahead just as fast as we possibly can without danger. I thank you for the attention you have given me, and hope that this may well receive your careful consideration. (Applause).

Mr. GREGORY.—I think that has been tried pretty well in this section. Mr. Bunting is best qualified to speak on that, and I would suggest his name.

Mr. BUNTING.—I can only say, that during the past few years in this vicinity we have endeavored to carry out some of the ideas that Mr. McNeill has expressed, and that we have met with considerable success, more particularly in connection with the railway people. We have succeeded, I think, in placing our goods here, in the market, in better way than before, and the returns received from the various markets where we have shipped have almost been invariably good. (Hear, hear.) There are times when reports that have come back have not been so favorable as we would have liked, but in looking at the details of the matter, we have been able to find out where the difficulty arose; and I think with Mr. McNeill, that co-operation is the true idea as far as fruit-growers are concerned. In taking up the matter in the Committee appointed this morning, it will be my duty to work this idea as far as I can, and in approaching the transportation companies in that matter, we will bring as much influence to bear as we can.

Mr. MCNEILL.—It is gratifying to have the first bit of experience in favor of this particular plan. I hope, in the years to come, it will be so common that we will not have to ask for experience along these lines.

NOTES ON EXPERIMENTAL SPRAYING IN 1898.

By W. M. ORR, SUPERINTENDENT OF EXPERIMENTAL SPRAYING, FRUITLAND, ONT.

One learns quickly by means of the eye, and an ocular demonstration is always the most convincing. Spraying bulletins are excellent educators, but I fear the greater portion of the bulletin is seldom read. However, let a farmer once see the work of preparing and applying the mixtures, and let him be shown the different species of injurious insects on the trees, and the best method of dealing with them—and he will remember more about it than he would if he read a bulletin a dozen times. Realizing this, the Department of Agriculture for Ontario has for the past four years conducted a series of object lessons in spraying.

This year we worked at 30 points, covering the Province from Amherstburg to Renfrew. An agent visited each point seven times, and his dates were announced by poster, postal card, and in the press. The bulletin of 1897 was revised, and given to those wishing them at the orchards, beside a great many requests were received for them by mail.

That the farmers appreciate this effort of the Department to benefit them and demonstrate to them the best methods for caring for their orchards, is shown by the fact that the attendance this year was 3,538, beside many who visited the orchards, when the agent was not there, to see the results. This is about 700 more than attended last year, and almost double the number that attended in 1896.

Although the work for 1898 has only just closed, 31 applications have been received for the work next year, including two points where the work has always been done. These latter say, that the farmers had not realized how important it was, and wished for another opportunity to see the work.

Only one solution was used, Bordeaux mixture, according to the following formula:—Copper sulphate, 4 lbs.; fresh lime, 4 lbs.; water, 40 gallons. To this in every case was added four ounces of Paris green.

On account of the law which forbids the spraying of fruit trees when in full bloom, and on account of rain, many applications were lost, as the work had to be done at the date and hour named, so that the agent might reach his next point on time. However, the results in most of the orchards were satisfactory.

Allow me to give you a few of the actual results from this year's report. In estimating the percentage of perfect apples a part of the tree was picked clean, and the fruit carefully examined, every specimen which had a worm spot no matter how small, being rejected as imperfect.

In the orchard of Mr. Hugh Black, Rockwood, we had the following results:—

Snow.—Sprayed, 64 per cent. clean; unsprayed, 1 per cent. clean.

Ben Davis.—Sprayed, 100 per cent. clean; unsprayed, 28 per cent.

Wagner.—Sprayed, 26 per cent. clean; unsprayed, 2 per cent. clean.

Spy.—Sprayed, 100 per cent. clean; unsprayed, 36 per cent. clean.

Greening.—Sprayed, 88 per cent. clean; unsprayed, 24 per cent. clean.

Ribston Pippin.—Sprayed, 90 per cent. clean; unsprayed, 80 per cent. clean.

Canada Red.—Sprayed, 72 per cent. clean; unsprayed, no clean fruit.

This orchard has never been sprayed before. Concerning the work in his orchard, Mr. Black writes as follows, under date of Nov. 16th, 1898: "In reference to the effect of spraying this season, I feel in justice bound to give you my impression, which is as follows: 'The effect on the foliage was plainly noticeable all season. The leaves were fresh and had that glossy appearance which indicates growth. The bark was smooth and looked like the bark of young trees, the moss and roughness on the bark almost entirely disappearing, and the trees have made more new wood than for some years past. The fruit was, on the sprayed trees, as nearly perfect as is reasonable to look for. In my experience, I never saw, even years ago, before so many enemies came to stay, so entirely good a crop of apples. I am safe in saying that in our Spys, which were sprayed, there was not one barrel of culls to 100 barrels of good fruit. I am convinced that our chances of growing apples profitably will largely be in proportion to the thoroughness with which we spray. Good cultivation, plenty of barnyard manure, and careful spraying will ensure us equally as good and abundant fruit crops as of yore. I might just add that we had in one place in the orchard, two Greening trees, well loaded, and *not a single cull apple* was found, neither worm, nor scab, nor mis-shaped. We cannot now grow potatoes without using Paris green—we must also realize that we cannot grow good fruit without spraying. The first spraying will almost entirely destroy the tent caterpillar. I hope that our Ontario fruit growers will accept the situation and spray their apples and other fruits thoroughly. Excuse the length of this letter. I am so convinced and satisfied I don't know where to stop praising it.'"

In the orchard of Mr. James Gray, Bolton, we had the following results:—

Snow.—Sprayed, 80 per cent. clean, heavy crop; unsprayed, 23 per cent. clean, about half a crop.

Fall Pippin.—Sprayed 76 per cent. clean; unsprayed, 4 per cent. clean, one-half crop fallen.

Golden Russet.—Sprayed, 64 per cent. clean, this is the first clean fruit from these trees in four years.

Talman's Sweet.—Sprayed, 64 per cent. clean; unsprayed, 24 per cent. clean.

Colvert.—Sprayed, 84 per cent. clean; unsprayed, 20 per cent. clean, most of the fruit is fallen.

Spy.—Sprayed, 54 per cent. clean; unsprayed, 20 per cent. clean.

Flemish Beauty Pear.—Sprayed, 90 per cent. clean; unsprayed, 10 per cent. clean.

This orchard has never been sprayed before.

On June 30th, the agent writes: "Here are four Snow trees, two sprayed and two unsprayed, equally good last Spring and at blooming, standing side by side. Now, on the sprayed trees, the foliage is beautiful and the trees are well loaded with good-sized fruit, about 75 per cent. of which is free from scab; while of the unsprayed trees, although the tent caterpillar has been gathered three times, the foliage is almost ruined, the scab is prevalent and the crop almost a failure."

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In a letter written Nov. 15th, 1898, Mr. Gray says: "We noticed a marked improvement this year on Flemish Beauty Pears and Snow Apples, especially. The foliage on the sprayed trees was more luxuriant and stayed on longer in the fall. On the unsprayed tree there was almost no fruit free from scab, and very few fit for market; while on sprayed trees there might be about 90 per cent. of good fruit. Indeed all the varieties of apples sprayed showed a marked improvement when picking time came. It is our opinion that if the spraying is continued, year after year, that the fruit will be much improved, and that if this is not done very soon there will be little fruit worth gathering.

Mr. R. Govanlock's orchard at Seaforth we have the following results:

Spy—Sprayed, 70 per cent. clean, heavy crop; unsprayed, 20 per cent. clean, very light crop.

St. Lawrence—Sprayed, 80 per cent. clean; unsprayed, 50 per cent. clean.

Snow—Sprayed, 90 per cent. clean, heavily loaded; unsprayed, heavily loaded but not a clean apple.

King—Sprayed, 75 per cent. clean; unsprayed, 50 per cent. clean.

Gravenstien—Sprayed, 100 per cent. clean; no unsprayed trees.

Greening—Sprayed, 88 per cent. clean; unsprayed, 32 per cent. clean.

Flemish Beauty Pear—Sprayed, 50 per cent. clean; unsprayed, no clean fruit.

Under date of Nov. 17th, 1898, Mr. Govanlock writes as follows: "With regard to my orchard prior to spraying, I may say that the fruit was badly spotted, misshaped and full of worms, but this year after spraying there is scarcely a worm in the apples and they are far more perfect in shape. I picked five sprayed Snow trees, and they packed 25 barrels, and left scarcely anything but the bruised apples, while the unsprayed trees were worthless, good for nothing but cider. There was a marked difference on all the other varieties. I consider the spraying a direct gain to me of least \$50 in my small orchard. Of course I sprayed the balance of my orchard, but not so thoroughly. I am convinced that if every one would spray their orchard for a few years we could get rid of most of the pests."

Under date of Dec. 29th, Mr. Claude McLaughlin writes: "In reply to yours with reference to the spraying of my apple trees, I would say that in the fall of 1897 I was completely discouraged with the result of my apple crop, so I made up my mind to cut out all my trees (I have about 300). In fact I had cut some of them down, when I was advised by a friend to give them one more trial and to try spraying. The following spring I was making enquires about a spraying machine, when I received a notice from Mr. Orr calling a meeting of those interested in fruit raising in this section, and stating that it was the intention of the Government to conduct spraying experiments in different parts of the Ottawa Valley. I attended the meeting, and was so much pleased with Mr. Orr's explanations that I immediately offered my orchard for the experiments. Part of the trees were sprayed and part left unsprayed. With the result of the spraying I am more than delighted. The apples of the sprayed trees were sound and large, the foliage a good rich color, and the trees made more growth than ever before in one season. In the fall of 1897 I had no apples fit for use, all were small and scabby. In the fall of 1898, on all trees sprayed, I had perfect, large and sound fruit, and although the past season was an off year I had some of my trees propped they were so loaded. On the unsprayed trees the fruit was poorer even than in 1897, and perfectly useless. I have bought the machine with which the spraying experiment was conducted, and I intend using it next season, when I expect even better results as my trees were in very bad shape from the many insects that affected them. This fall they looked clean and healthy. I am fully convinced that with good systematic spraying and ordinary care of the trees, we can raise as good apples in this section of Canada, and better than in most sections. The spraying experiment by the Government was of very great value to this section and was much appreciated by the people."

In the orchard of Messrs. Freels Bros., Niagara-on-the-Lake, we had the following results :

Baldwin—Sprayed, very heavy crop, 48 per cent. clean, 90 per cent. fit for barrel-ling ; unsprayed, 4 per cent. clean, very light crop.

Snow—Sprayed, 16 per cent. clean, heavy crop, about 6 barrels fit to pack ; unsprayed, no clean fruit, about half barrel to the tree.

Astrachan—Sprayed, 90 per cent. clean ; unsprayed, 30 per cent. clean, dropped very badly.

Duchess—Sprayed, 90 per cent. clean, heavy crop ; unsprayed, 30 per cent. clean, dropped badly.

Fall Pippin—Sprayed, 80 per cent. clean, good crop ; unsprayed, no clean fruit and crop very light.

Harvest—Sprayed, 80 per cent. clean ; unsprayed, no fruit fit for market.

Spy—Sprayed, 40 per cent. clean, good size and about 6 barrels on the tree fit for packing ; unsprayed, no clean fruit, and only about one barrel per tree.

Mr. Freels says : "The sprayed trees were selected in different parts of the orchard, and that he had no right to expect a larger crop from the sprayed than from the unsprayed trees, and that if all his orchard had been sprayed this year with the same results as were obtained in the experimental trees it would have been worth over \$1,000 to him.

Under date of Nov. 22nd, Messrs. Freels Bros. writes : "Your letter of the 12th inst, received requesting information as to the benefit derived from the spraying of the fruit trees. In reply thereto we have to say that the spraying of the trees did great benefit to them, and the yield of fruit was much increased thereby. However, we think that the spraying this year was not a fair test, owing to the wet and rainy weather, and we are satisfied that with favorable weather, the spraying of the trees would be of incalculable benefit. Our crop this year under the most unfavorable circumstances, exhibited increased yield, and, in comparison with orchards not sprayed, our showed the benefits of spraying."

In Mr. Hugh Gourlay's orchard, at Carp, the following results were obtained :

McIntosh Red—Sprayed, 100 per cent. clean ; no fruit unsprayed. This apple spotted very badly other years.

Snow—Sprayed, 105 per cent. clean ; unsprayed, 10 per cent. clean.

Baldwin—Sprayed, 100 per cent. clean ; no unsprayed fruit.

Under date of Nov. 17th, Mr. Gourlay writes : "Your letter received asking for information about my orchard, prior to the spraying and the result of this year's spraying. Last year and other years the foliage was often spotted and not healthy looking, and the tops of the limbs were often blighted. This year the sprayed trees presented a very healthy appearance the foliage being very green and most luxuriant, the trees making just about twice the growth they did other years. The fruit other years was more or less spotted ; much of it being badly shaped from the bites of insects, more than half the Snow Apples being unfit for sale. This year the sprayed fruit was much larger and better shaped than ever before, nearly free from spots, nine-tenths of it being sold as first-class fruit. I sold all my first-class fruit at \$3.00 per barrel. I attribute this all to the effects of spraying. The benefits derived from spraying are almost incredible. Some of my neighbors had their orchards striped bare by the tent caterpillar and were much pleased to see the good effects of spraying on my trees. I had not the faintest idea that spraying could produce such a marked improvement on an orchard in one season."

With a view to demonstrating that better results can be obtained where the work is properly and systematically carried on, year after year, we have for the last three years worked in Mr. Albert Pay's orchard, St. Catharines, spraying the same trees each year.

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In 1896 the results were good. In 1897 Mr. Pay said that if all his orchard was as heavily loaded with as good fruit as were the trees which we had sprayed for two years, it would be worth \$2,000 to him with apples at \$2 per barrel. As to the results in 1898, writing under date of Nov. 25th, Mr. Pay says:

"In reply to yours of the 12th regarding spraying, I would say the row of trees sprayed by you showed a very a decided improvement over the row next it which has never been sprayed, both in foliage and fruit. This is the third season you have sprayed the same row in my orchard, and the Greenings and Northern Spys in that row have had a good crop every year and the Baldwins two good crops in three seasons. The Baldwins had a very heavy crop, in fact too many to get a good size. I picked eleven barrels off two Baldwins in the sprayed row, and not two barrels in the next row which were unsprayed. There was hardly a marketable apple on the unsprayed trees, while fully 90 per cent. of the sprayed fruit would class No. L. The Greenings and Northern Spys would be about the same. There has been a number of buyers through my orchard this fall before the apples were picked, and some saw the fruit before packing and they all spoke very highly of the stock and told me it was the cleanest and brightest fruit they had seen this year. There can be no question in my opinion as to the benefit of spraying, after the showing it made during the three years. I think, however, it should be done successfully with less than six applications. However, even with that many times, I fully believe it will pay to spray every year."

It is only fair that I should tell you of some of our failures as well as our successes. I will give you in addition to the results, extracts from the agent's note book made at the orchard on the days of spraying, so that you may be able to judge of some of the difficulties we encounter and the causes of our failure.

In Mr. R. S. Lang's orchard, Exeter:—

1st application, April 22nd.—Rained all day, so that it was impossible to work.

2nd application, May 4th.—Cloudy, followed by an all night rain.

3rd application, May 16th.—Fine. Many of the trees in bloom. Sprayed only some of the latter varieties. Bud moth and tent caterpillar bad on unsprayed trees; found only one tent on sprayed trees.

4th application, June 1st.—Fine, fall apples well set, winter apples are light. Oyster-shell bark-louse, aphid, bud moth and tent caterpillar at work in his orchard.

5th application, June 13th.—Rained all day. Scab showing badly on Snows. Agent writes on June 13th. "I am afraid that this orchard will be a failure. I have only had one good spraying here."

6th application, June 25th.—Rain in forenoon, but cleared and afternoon was fine. Found a few green fruit worms and Tussock moths. Foliage on sprayed trees decidedly better than on unsprayed.

7th application, July 9th.—Fine. Considerable scab but not many worms among sprayed fruit.

I inspected Mr. Lang's orchard and found:—

Greening—Sprayed, 50 per cent. clean; no unsprayed trees.

Ben Davis—Sprayed, 10 per cent. clean; unsprayed 10 per cent. clean.

American Golden Russet—Sprayed, 73 per cent. clean; no unsprayed trees.

Snow—Sprayed and unsprayed about equal.

In a neighboring orchard I found American Golden Russet unsprayed 20 per cent. clean and Greening unsprayed 20 per cent. clean. Mr. Lang says that he has never had any first-class fruit off this orchard. All the fruit has been scabby or wormy and not fit for packing. On Nov. 15th Mr. Lang writes, "Replying to your letter of Nov. 12th, would say:—The spraying of my orchard was a success this year in the way of destroying insects and worms. There was scarcely an apple but was free from worms, something

very unusual for my orchard, but as for destroying the scab the spraying was not a success this year. There was so many wet days when your operator called to spray, that that may be the cause of the scab not being checked."

We had the common insect enemies to contend with this year. They were more numerous than usual, the dry hot weather being favorable to their propagation. The tent caterpillar was reported very bad on the 23rd of April. In many sections orchards were entirely defoliated by them. At one station where no spraying was done except on the experimental plot, they stripped the trees of their foliage, although the owner of the orchards said he had gone over the trees three times and destroyed their tents. The agent reported that the sprayed trees looked like monuments of mercy in the midst of surrounding desolation. However they were controlled without difficulty on the experimental trees.

The aphid was reported bad at some points as early as April 23rd, although it was not nearly so bad as last year. I am thoroughly convinced that to secure the best results we must begin treating the aphid and tent caterpillar much earlier than we have been accustomed to do. At Fruitland we have discovered aphid on the buds as early as April 8th and tent caterpillar on April 15th.

The green fruit worm a comparatively new-comer, and but little known here, is likely to become a serious pest. Some growers report from 20 to 30 per cent. of their apples and pears ruined by it. The agent reported on June 16th that it had destroyed much fruit.

The rose-beetle was reported as doing a great deal of damage at Niagara-on-the-lake, on June 11th. The agent says they were very destructive, especially on King trees. He says there was hardly an apple without one or more, and that he had found as many as six or eight on a single small apple. They had been in this orchard three years. Prof. Saunders says that they are destructive to the leaf of the apple, plum, cherry and apricot, but here they were working on the fruit and were especially destructive on the King.

The codling moth, the oldest and most formidable enemy which the apple and pear grower has to contend with, was very numerous this year, except in a few orchards in North-eastern part of the Province, in one of which, at Oarp, twenty miles above Ottawa, owned by Mr. Hugh Gourley, and comprising twenty acres, varying from ten to twenty years old, not an apple injured by the codling moth could be found. Mr. Gourley says he has never seen an apple in his orchard injured by the codling moth.

The owners of every orchard in which we worked this year, with one exception, Mr. Curwen of Goderich, report that the moth was largely controlled by spraying.

In the southern portion of the Province the moth was very numerous and continued to propagate until the first of October. Early in this month, the young worm, scarcely visible to the naked eye, could be detected just burrowing through the skin of apples that up to that time were clean. As the last spraying was done about the middle of July, these latter broods were not destroyed by it. Had the whole orchard been sprayed the latter broods would not have been so numerous, as there was nothing to prevent the moths, which had bred on the unsprayed trees, propagating on the trees in the experimental plots, after the spraying had ceased early in July.

Mr. R. A. Dewar, of Fruitland, has a black Detroit apple tree eight inches in diameter, standing near his buildings, the fruit of which has for years been badly infested with codling moths. This year he sprayed it five times with Bordeaux mixture, adding four oz. of Paris green each time. The first spraying was done before the tree blossomed, and the other four at intervals of from twelve to fourteen days, ending about the 12th of July. Up to this date not more than five per cent of the fruit was injured by a worm, we examined the tree the 1st of August and found about 75 per cent of the fruit wormy. On the 25th of August we made another examination and could not find a clean apple. Many of the apples had three or four, and in one case five, worms in an apple. No two of them had entered at the same place, neither had they burrowed into each others

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tunnels. There appeared to be no choice as to the place of entering the fruit. On the 15th of May a large coarse sack was bound to the trunk of the tree to trap the larvæ as they were going up or down the tree. This was examined on the first of June but no larvæ were found. It was again examined on the 11th of August, and about 200 larvæ were found, most of them in cocoons and about 50 in the chrysalis. A large number of empty cocoons from which the moth had emerged were also found. We put a number of these chrysalis into a glass vessel and in a few days the moths began to appear. In eight or ten days we had over twenty beautiful specimens of the moth. A number of eggs, which appeared like creamy spots about the size of a small pin head, were deposited on the glass. The bandage was replaced and left until the 27th of August, when it was examined and 261 larvæ, mostly in unfinished cocoons and one chrysalis were found. It was again put on and left until the 15th of November, when 191 larvæ were found, all cocoons. After a careful examination no larvæ were found on the tree at this date, except in the folds of the sack, and in the crevices of the bark under the sack. In all 703 larvæ and chrysalis of the codling moth were taken from the bandage around this tree in addition to which quite a number escaped as could be seen from the empty cocoons. On October 11th we put socks on those trees where they were examined on the 29th of November, sixteen larvæ were found on them.

It appears from the result of experimental work carried on throughout the Province that in the greater part of Ontario the codling moth can be controlled by spraying. However, in the southerly sections, particularly under the mountain between Hamilton and Niagara, they continue to do much damage after the regular spraying season is over. They are much worse directly under the mountain than they are on the lake shore two miles away or on the mountain. This is probably due to the large amount of fruit grown and the shelter afforded in that district. We propose next year, after the regular spraying has ceased, to continue the work in one or two orchards until picking time, using Paris green mixture, that we may ascertain whether the latter broods can be destroyed this way.

No doubt it would be advantageous to supplement spraying with bandages. It costs but little, either for material or labor. Full instructions for doing the work may be found in Prof. Saunders' excellent work "Insects Injurious to Fruit." From our own experience we would consider it necessary to continue the work until the middle of October. The first wormy apples reported were June 28th.

The black or dead spot on the limbs of apple trees is quite bad in some orchards and appearing more or less all over the province. Mr. McGurn's orchard at Marysville is very badly affected, several trees being killed by it. He expects that the orchard will be ruined in a few years.

It appears from results obtained in experimental work, that from 65 to 80 per cent. of perfect fruit can be secured, when spraying is regularly and properly done, and when the conditions are favorable, such as an orchard standing high and dry or on well-drained land, away from buildings or hedgerows, and the trees planted far enough apart so that the limbs do not come within ten or twelve feet of touching, that they have an abundance of sunshine and free circulation of air. It is also important that the trees be properly trimmed, all rubbish removed and the land be properly fertilized, for it is a fact that two-thirds of the orchards in Ontario are starving. With good apples at the price they have commanded this year and last year, the orchard, if properly attended to, would be the most profitable part of the farm.

We have a fertile soil, the climatic conditions are favorable and the apple attains a degree of perfection in Ontario, not exceeded in any part of the world. We have an unlimited market in Europe for first-class apples. All that is necessary is that we treat our orchards intelligently and give them the care and attention they require, thus securing annual crops and avoiding over-production alternate years, which gives inferior fruit and taxes the trees. Then there will be no more difficulty of the market being glutted by an over-production alternate years, and with careful and honest packing our success is assured.

Mr. MILLS : Were all the results that you read from trees sprayed the same number of times ?

Mr. ORR : Yes, these men reported from the points where we did the work.

Dr. MILLS : You did this work that is reported on ?

Mr. ORR : Yes ; this is their own report of it apart from ours.

Dr. MILLS : How do you account for the great differences in the immediate neighborhood, in the same locality almost ?

Mr. ORR : We can account for the difference in the results from the location of the orchards and the conditions they were in.

Mr. MILLS : Are you sure the tops of the highest trees are always reached by the rod ?

Mr. ORR : We are sure sometimes that they are not. In some cases we have to do the spraying off a stoneboat. The trees were 40 feet high, and it is impossible to do the spraying in such a case.

Dr. MILLS : What is the length of the rod you used ?

Mr. ORR : From 12 to 14 feet. We had trees standing close together and interlacing and needing trimming very much, and in such an orchard as that you cannot expect to do perfect work.

A Delegate : Do you spray from one side of the tree, or both ?

Mr. ORR : We spray on both sides of the tree, and under it as well ; you get on a waggon and drive it up and down to spray.

Mr. BRODIE : Do you not think if you used more Paris green you would have had less codling moth ?

Mr. ORR : You will notice we have been very successful with the codling moth up to the date that we ceased spraying. The principal damage done by the codling moth was after the spraying had ceased.

A Delegate : That is the second brood.

Mr. ORR : I think it was one continuous brood from the 15th May to the 13th October.

Mr. CASTON : The entomologists told us some years ago that there was only one brood of them. We are finding out there are a good many, especially in the Niagara Peninsula. I can corroborate what Mr. Orr has said about the sacking of the moths. I had a little experience just there. I had a piece of sacking, and I put it in the branches of the trees, and it remained there. Sometime about the beginning of November there was a young tree of twigs that was just beginning to bear, not near a peck of apples, and there would not be as many moths in the tree as in the larger tree, but I picked it up and examined it, and it had over a dozen nice fat codling moths ; and I thought, would not that be a good experiment to carry out, to take a few rags and put them in the trees and then examine them from time to time ? I believe that would be one of the most successful ways of dealing with the codling moth. I do not think there is much of the Paris green gets into the calyx. I think there is apt to be chilly weather at the time the egg is deposited there, and the instinct of the insect leads it to deposit its egg in a protected place, but I do not believe our spraying will kill many in the calyx of the apple. If you find two apples lying close together on a limb you will find holes bored in from opposite directions, and where there is a leaf covering the apple you will find one or two holes under that, and this second brood is the most destructive of the whole. Another very valuable thing would be the introduction of hogs. When an apple drops, in ninety-nine cases out of a hundred there is a moth in it, and when the hog devours the apple that is the end of the moth, too. I think the hogs and the spraying would work admirably together ; two or three men have told me they do. I think we may congratulate ourselves on the fact that our manufacturers in this country have produced excellent spraying machines, and that in so short a time they have been so well perfected ; but I think there

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is room for a slight improvement, that is providing for a vertical spray to get at the insect that is on the under side, for example the aphid, because that is so destructive to the tree, and then to spray in the ordinary way, and as those insects insert their bill and suck the juice out of the leaf, Paris green is not of any use, and we have to apply something that will kill them by contact; we want something to get at them from the underside of the leaf.

Mr. BRODIE: My experience agrees exactly with Mr. Caston's in regard to hogs being turned into the orchard. I turn in my cattle to eat up the refuse, and we have hardly any codling moth. The only place where we have codling moth is where we cultivate our trees. In these orchards that are old in sod, we have no codling moth whatever.

SPRAYING FOR ORCHARD PESTS.

BY DR. JAMES FLETCHER, CENTRAL EXPERIMENTAL FARM, OTTAWA.

I heard Mr. Orr's report with a great deal of pleasure, and I believe it is a very valuable one. It is valuable because he gives us facts, and does not try to make conclusions from them; he gives us facts, which being true are scientific. I think it is a pity he was not allowed to read all the facts, giving the percentages, which would have showed fruit growers that it paid them to spray and to save crops in the best condition they could; but, of course, they know their own business best. Mr. Orr has given us this year, as he gave us last year, a report of very great value indeed, and if there were nothing else here to be discussed this afternoon, I think it would be one of the discussions that would mean more money in the pockets of the fruit growers than many other discussions which take up a great deal of time. One of the points which Mr. Orr asked about was the number of broods of codling moth in the course of a year. This is an important question, because it has been supposed that the experience of the first writers on the codling moth was going to be the experience of every experimenter or fruit grower in other parts of the country. Mr. Caston speaks of what the entomologists had told us. The entomologist, he told us, said there was one brood of codling moth in a year, and they told us perfectly correctly. The writer who made the first statement, which has been copied by thousands of writers since, was a New York man who wrote with perfect accuracy about New York. A few years later, Mr. Saunders wrote about London, and he wrote perfectly correctly fifteen years ago, when he said there were two broods, practically continuous after the middle of June, of codling moth. Later still, Prof. Cook, of California, says there was three broods; and they are all perfectly correct. According to the climate this insect changes its habits. The appearance of the moth brood all during the season is only apparent and not actual. There are but two broods, and if Mr. Orr would look through his notes, or if some one else would make notes carefully next year, you will find that the first brood of the codling moth that lays the eggs appears just about the time when the young apples are formed. Mr. Caston's criticism about the egg being laid in the calyx, unfortunately is not founded on fact. The eggs are not laid in the calyx, and there is no reason why they should be. The eggs are laid any place, and unfortunately on the leaves, but the insects crawl on the apples, and the nearest channel by which they can obtain access to the interior of the fruit is through the calyx and into the pips, which they generally try to get at first, and where they do a great deal of their harm. The second brood, which appears in August and lays its eggs, which give all the after trouble, is there prolonged in the appearance of the moth. It is very much like the peach borer. The moths begin to appear after mid-summer, and keep on appearing right up till cool weather. It is all one brood; it is not a succession of broods. Some people say, "Why, how should eggs laid one time produce insects at another?" We cannot tell why, but we have proved it over and over again that that is the case. I know only one, namely, the caterpillar, where

the eggs were laid on the 1st or 2nd July. They pass through three or four moults before they reach maturity. Some of them pass one moult and then lay in lethargy, and more remain in lethargy until next spring. Some of these caterpillars pass two moults, and some pass three moults, and next year the insects will appear very much sooner than those that only passed one. That will give several appearances, extending a month over the time that the codling moth will appear. There are two broods of the codling moth, but as they are brought out and appear during a long period, it makes the appearance of the young caterpillars very much prolonged in time, and it is practically the fact that young caterpillars may be found any time after the 1st of August until late in the year; but it does not matter to horticulturists and fruit growers particularly what time these caterpillars appear; they know that there is a certain danger-time in the year that they have to protect themselves against, and if they find that fact out that is all they want. It does not matter to the horticulturist where the codling moth lays the egg—in the calyx or on the apple. They know that the caterpillar is going to get inside the fruit and do harm. It is a matter for the entomologist to find out how it gets there, and for the horticulturist to prevent it. Mr. Orr, and Mr. Pettit before him, has shown in his report that a great deal of money can be saved by spraying. Spraying pumps have been improved so that we have nothing to complain of in our times. There are two sprayers here to day—the Spramotor and the Aylmer pump—excellent pumps, as good as any man wants to use. I do not say they are better than any others, but I say that they are all that a man wants. You need not stop spraying because you have not got a good pump. You should get a good pump, and use it. You know if you spray your trees regularly, and Mr. Orr's figures will show you the fact, that you are going to save a large percentage of your fruit. I maintain it pays every man to spray his trees, it does not matter whether he has two trees or two thousand it will pay him to spray those trees so that they will give good fruit, which will give him a good return. There are orchards in some parts of the country to-day which are not sprayed where hardly a good barrel of apples can be got, and adjoining those orchards, separated only by a fence, are orchards where fruit of A1 quality can be picked and give the owners big returns. You are perfectly competent to know that by the very fact that you did not want your time taken up by all the figures Mr. Orr was prepared to read to you, because you knew that you could save from 60 to 80 per cent. of your fruit, and have it of the first quality by spraying. I say that report which Mr. Orr has given us is a very valuable one.

There is only one omission that I saw in it, and that was that he said nothing about the San Jose scale. We might infer from it that that San Jose scale was nothing to you growers up here. There is nothing more important than to prevent the introduction of the insect into the country. Your Government has put forth grand efforts to stamp it out, and as you know this Association is doing a good work in stamping it out. Mr. Orr last year drew attention to that pest and the enormity of it. It was of such importance that the Ontario Government and Federal Government undertook to pass measures, which were at first criticised, and which are now endorsed by the whole country, to stamp out this pest. I am surprised there is nothing said about it; nor do I see anything on the programme about that insect which is doing so much damage, but which by the efforts of the Government has been brought down very materially and to a greater degree than any one hoped for last year. The efforts that have been put forth are enormous, and the results, though they do not show now, will show, if they are kept up a little longer, that an enormous good has been done to the whole country. From the fact that people have not been ruined in the country some are arguing that too much fuss was made about it. I say, gentlemen, not one word was said where a hundred ought to be said, for such a pest as that is, can only be understood by going down to the southern orchards and seeing it. Last March I saw down in the State of Maryland acres and acres of magnificent fruit trees that had been killed as dead as possible in three years simply by that one insect having been introduced—one large orchard of 28,000 trees wiped out in three years—and yet people will say that too much fuss is being made about the San Jose scale. I am thankful to say that our Government did put into execution these Acts, which were discussed so fully in both Houses, and the good effects have been enormous.

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Mr. ORR: I think there was no time of the year but what we could find a young codling worm just boring into the apple.

Prof. FLETCHER: That is after the middle of June?

Mr. ORR: Yes.

Mr. A. H. PETTIT: There are a number of people here who have trunks and branches of peach trees affected with the borer, with the gum oozing out quite freely. If you will give them a little life history and remedy it would be helpful.

Dr. FLETCHER: The specimen on the wood that has been brought, and which when an attack is present is indicated by a large mass of gum that is produced and oozes, is a very small beetle, one of the bark borers, which only bores into the bark and not into the wood. The best remedy is the Saunders wash with a little soda ash put into it—soft soap made thin enough to use with a large brush, and washing soda and water, then add to that carbolic acid sufficient to get a strong odor. It has been used by Mr. Karl Fisher, of Queenston, with great success. Put the first wash on in March, after that two applications will be sufficient. One in March and the other about the end of May.

Dr. SAUNDERS: I wish to offer my word to what has been said of appreciation of this good work which Mr. Orr has been doing. I do not think there is any line of work which the Ontario Government has taken up which is likely to produce more permanent and lasting result than this work of spraying our fruit trees. The value of the apple crop in Ontario depends very much on the cleanness of the fruit and its quality, and we cannot have clean fruit now-a-days of good quality unless we adopt some regular system of spraying. Fungous enemies and insect enemies are multiplying to that extent that it is no use to look for good results as a rule unless the farmer and fruit grower will take the pains to meet these enemies by which he is surrounded. I know you occasionally meet with fruit growers who say, "I do not believe in spraying; I have got just as good apples as my neighbor, and I have not sprayed, and he has." There may be exceptional cases of that kind. There are, no doubt; because these people speak the truth. But there is no rule that has not exceptions, and these exceptions can be explained in every case without reflecting on the value of spraying. I was very much struck this autumn when visiting the Industrial Exhibition with the excellent demonstration which Mr. Orr made there on the value of spraying. I think there is nothing appeals to the mind of the ordinary and intelligent observer so strongly as a practical demonstration by object lessons, and I think Mr. Orr hit on a capital method of bringing together a large number of samples from different orchards where these experiments had been conducted, and showing fair representative fruit from sprayed and unsprayed trees. Sometimes when we get up to talk about these things at meetings, or talk about them to farmers individually, they think we are allowing our imagination to run away with our judgment, and putting things in too strong colors; but when they have the fruit put actually before them they can judge themselves of the results and the methods used; and I think it was an admirable method of demonstrating the value of this most successful work. I think it cannot be commended too highly, and it has evidently fallen into good hands and been carried out very thoroughly. (Applause).

Prof. MACOUN (Experimental Farm, Ottawa): I listened with very great pleasure to Mr. Orr's reports, and I would like to add what results we have had this year at the Ottawa farm. In the Ottawa District we have not been very much troubled with scab; in fact it is very rare that I have seen a case of it this year. Our spraying for scab did not improve the position to any great extent, but on spraying for codling moth, I observed that our early apples up to the Duchess were almost free from codling moth. From that time to the fall and winter apples were badly affected with codling moth. We sprayed our orchard five times this year; but I have come to the conclusion that if we are to rid the orchard of codling moth, if we are to have clean fruit, that we must spray the winter apples later on in the season. It is impossible of course to spray some apples that ripen earlier, to spray them late on account of their color, but for winter apples I believe it would pay us to spray late in the season. I had an excellent opportunity this season of observing the good effects of spraying in Montreal. While there I had the pleasure of visiting my friend Mr. Brodie's orchard, and saw there the immense advantage which he

had over his neighbors. Mr. Brodie has carefully sprayed his orchard for several years. His trees are in a far healthier condition than his neighbor's, and this year he tells me he produced 1,500 barrels of apples. Now, I saw the trees of his neighbor, and I saw there was scarcely any fruit on them, and Mr. Brodie tells me that they were none of them worth picking; in fact the man had nothing in his orchard. I think this example alone will show fruit growers how important it is to spray their trees thoroughly.

Mr. PATTISON: Some years ago, having some leisure about the 13th August, and noticing that the codling moth, the second brood, was working badly, I took the trouble to thoroughly spray the orchard with Paris green at that date. I am sorry to say that I found as far as I could see that it did no good whatever. I could not ascertain that I had benefited in the slightest degree from it, and I am afraid that spraying at that time of year we do not seem to get at the insect sufficiently to do it any serious damage.

Mr. HUGGARD: I have a small orchard, about 80 apple trees, that I have sprayed some six or seven years. These last two seasons our first spraying was before the buds came out, and I consider it as important a spraying as there is the whole year for the black spots. Out of 130 barrels that we just shipped recently we did not have one bushel of wormy apples. I attribute the whole thing to careful and intelligent spraying at the right time.

Mr. TWEDDLE: I had some experience this year as well as years before in spraying, not only in my own orchard but in that of other parties, and I must agree with Mr. Orr that it was of a great deal of value. I was so unfortunate that I had to take to the road in selling spraying pumps. In my work I had a great deal of opposition from people whom I tried to sell to, and it occurred to me that I would try to take some means of convincing them from a financial standpoint that these things could be accomplished; so I arranged with a neighbor to spray his orchard and pick the crop for one-half. He thought it was a good idea; as he said "If you do not make anything I will not have to pay you, and it won't cost me much; if you make anything I will make something." So he told me if I would spray his summer apples, Astrachan and Duchess, for nothing, give them a couple of applications, he would give me one-half of the balance. The orchard consisted of two parts of 10 acres each, both the same aged trees, about the same cultivation and the same kind of soil and everything alike as near as I could tell. The trees were not pruned sufficiently, or as thoroughly as I would have done. The arrangement was made about the 7th May, and I sent a rig down to work right away; we put on what we could. Some of the trees bloomed before we got over it. In all we gave it four applications; the last one was about the last of July. I think we finished on the 30th July, and when we picked the apples some of them had the Bordeaux mixture on them. We used more Paris green and lime; we used six ounces of Paris green, forty gallons of water, and six lbs. of lime. When I finished on the 30th July the apples on both orchards, as far as size was concerned, seemed about alike, and in one orchard there seemed to be about as much crop as the other. I never went back to the orchard till about the middle of September, and I went into the nearest one first, and I was surprised to see the amount of fruit and the size and condition of them. I said to myself, "Why, here is a bonanza for me as well as for the owner," and I felt very well pleased. When I went over to the other orchard, where I expected to see three times as much fruit, I was very much disappointed in the quality and condition both in the variety and fruit. I could not understand; I sprayed both orchards alike, and they looked to me just alike as near as I could tell, and cultivated alike; but I found that the first orchard had been quite well manured with ashes and some barnyard manure, while the other had been pretty badly neglected in that way. From that orchard—and it was the off year—I took about 225 or 250 barrels, and the other orchard, instead of having three times as many, there were only 150 barrels of first-class fruit—hardly first-class; we called it XX No. 1 and the other XXX. In the orchard which was not manured we took off about two carloads of peaches and one carload of Duchess, and one carload of the other, in all about forty-six tons. In the other orchard we took off about 480 barrels. That does not seem a large number of No. 1 fruit, but the unmanured orchard rendered a very small proportion of saleable apples; there is where we had the loss. I may safely say

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that had that orchard been manured it would have yielded a thousand dollars more this year than it did. We shook down about fifteen tons of crop that were too small for sale, and my share of that orchard was \$680, and it cost me about \$275 or \$280 for the spraying and packing and picking up of this fruit, cullage, etc., which left me just about \$480 clear for the operation. I think this is a practical illustration that might do as much as any other illustration. There is nothing political about it. I got money out of it, and am very well satisfied. (Applause and laughter).

R. W. SHEPHERD (Montreal): The fruit growers in the Province of Quebec who have tested spraying thoroughly are I think all quite unanimous that spraying must be kept up and that it pays well to spray. In connection with my export business of apples in cases, I have to purchase at outside places; I grow apples in different sections of the Province. I may say first of all that Fameuse is our leading apple in the Province of Quebec. You call it the Snow. It attains to great perfection in the Province of Quebec, and is our leading apple. It is by a long way the first and most profitable apple. It is also perhaps the most affected by the spot of any apple; therefore in our Province it is an absolute necessity for us orchard men to continue spraying, and to spray well, and we must not neglect it. In connection with my export business of Fameuse apples in cases, I have to visit the different sections of the country in order to buy the fruit to fill my cases in the different orchards, and in one section of the Province I visited one orchard where a man of great experience had about 500 barrels of Fameuse. After going through his orchard I said to him, "I don't think you will be able to fill one of my cases out of your whole orchard." He says, "No, I don't think I will; not good enough, not clean enough." I went to his neighbor on the next farm and he had sprayed his orchard the last three or four years and sprayed pretty thoroughly. I went through his Fameuse orchard and found very good fruit. He filled fifty cases. Further on a man who sprayed carefully filled 100 cases; and it was only in the orchards that had been sprayed that I could get good enough Fameuse for my business. My own experience is that unless the spraying is kept up and thoroughly done every year the orchard men in the Province of Quebec may as well give up growing Fameuse; and I think Mr. Brodie will bear me out in that, that in his section his orchard is in fine condition. His neighbors mostly French Canadians, have not bothered themselves about spraying, and they are cutting down their orchards. They found that Fameuse has become unprofitable, and the result is they don't want to learn I suppose, and they are going to some other kind of cultivation. That is the experience I had this year; in the orchards that were not sprayed I could not get good enough fruit for my business, in fact I had to give up buying fruit because I could not get good enough in the sections where the spraying was not done.

Mr. CARPENTER: I would like to know if Mr. Orr has experimented in some other directions of spraying than apples? Many of us are interested in growing pears and plums and peaches and no apples. Is there the same good done in spraying of peach orchards?

Dr. SAUNDERS: I may say in that exhibit in Toronto to which I referred, Mr. Orr exhibited some samples of the Flemish Beauty pears which had been sprayed, and some which had been gathered without spraying, and the one lot that had not been sprayed were badly cracked and diseased while the others were healthy. I have no doubt Mr. Orr has carried on experiments of other varieties of pears besides Flemish Beauty.

Mr. CARPENTER: Does the Government confine it to apples alone, Mr. Orr?

Mr. ORR: Apples alone is our regular business. Of course I have been spraying all my fruits for the last 13 years at home; that is experience apart from what I am doing in my regular work.

Mr. CARPENTER: Would it not be a good idea for the Government to give us a little benefit of the operation of spraying other fruit trees?

Mr. ORR: Your crops are so regular and you make so much money out of them that your case is not demanding much sympathy from the Government. (Laughter.) If time

would permit I could tell you something of my experience at home, but I hardly feel like taking up time when there are other papers on the programmes. I purpose giving my experience in spraying peaches in an article in the *Horticulturist*.

Mr. COLE (St. Catharines): There has been nothing said here to-day about the spraying of grapes. We all agree with Mr. Orr that it is very essential for fruit growers to spray their orchards. About six or seven years ago my vineyard—about 50 or 60 ton vineyard—was badly injured with black rot, something new to us in this section of the country; but we were advised to spray, and we did so next year with a great deal of benefit. My vineyard was hurt so badly that it took a great deal of time to repair it for the market, and then my crops were not in a very good condition; but I sprayed thoroughly that season, and out of 54 tons I am satisfied I did not have 500 pounds of culls, and I attribute the whole thing to the spraying. Since that we spray our vineyards thoroughly, which we feel it is a necessity to do in this vicinity in order that we may get first-class crops. It is as essential to spray our vineyards as it is apples.

Mr. ORR: The instructions for spraying apple trees apply to all other fruits. The necessity of spraying apples particularly is because we go over the whole Province, in sections where they have never seen the work done. You spray pear, peach, vineyards exactly in the same way and with the same material as apples. I will tell you what I did with my peach trees. I had heard that experimenters were spraying with a preparation of lime in the fall and winter to keep the buds back in the spring. They calculated by having the trees white that it would not attract the sun, and delay the blooming period a week or ten days. Last December I sprayed my peach trees thoroughly with preparation of lime alone, and in February and March they looked as white as snow. In the latter part of April and May, we sprayed the same trees with Bordeaux mixture. We just sprayed 100 trees with lime, and in the spring we sprayed all the orchard. The Bordeaux mixture I think was too strong for the narrow leaves or willow leaf peaches; after the spring came in they dropped the foliage and the crop, but all the rest of my peaches bore a good crop. I think when the trees were dormant that the Bordeaux mixture the regular strength did not injure them, but after the growth commenced I think it injured the wood so that they dropped their foliage. However, they got a new foliage and had a good crop of foliage later on, but they dropped their fruit. That was simply a few narrow leaf varieties. Where the broad leaf varieties took the material there was no harm done. I do not know of any peaches grown apart from what I had, and I attribute it all to spraying, preventing curling of the leaf which in my own case took the last leaf off the trees that were not sprayed.

A DELEGATE: What about the effects of the lime?

Mr. ORR: I was away from home, and I cannot tell you accurately as to that. Where they have been testing it for two years they claim they can hold buds back for a week or ten days.

Mr. PATTISON: Do you use any Paris green on peaches?

Mr. ORR: No.

Mr. PATTISON: What strength do you use if for plums?

Mr. ORR: I use the regular Bordeaux mixture, adding 4 ounces of Paris green to each 40 gallons of water for plums.

Mr. CASTON: There is one difficulty I have known in spraying with Paris green; if you stop with half a barrel of mixture and go to dinner, that Paris green goes to the bottom and I do not think there is an agitator made that would bring it up again if you do not use something else besides the agitator; and then when you come near the bottom you will have a very strong mixture. I would like to know Mr. Orr's experience as to that. When the Paris green mixes with the lime in the pump it forms a mass that you cannot get at with any ordinary agitator.

Mr. ORR: We never allow our appetites to drive us away with half a barrel of spraying (laughter); but if such a thing should happen I would not take the slightest hesitation in going right on with the agitators.

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Dr. FLETCHER: There is this trouble, as Mr. Caston says, and even in spraying with all care it is well to wash your barrel out or stir it up with a broom after about three fillings. You can do it with a corn broom very well. In reply to the question as to spraying Paris green in the mixture, that is a very important one. I have never found it necessary to use any greater strength than one pound in 200 gallons, and have found excellent results with that. Mr. Brodie asked if it would not be better to have a stronger mixture than Mr. Orr uses. I would say it would be very dangerous to have it ever stronger than that. I think it was a lack of patience. Paris green is a slow killing poison, and it takes about two days to get the results.

Mr. BRODIE: In the meantime they eat up the whole of the potatoes. Laughter. I have heard from one of our Montreal fruit exporters that one of his farmers consigned apples to him sprayed with raw petroleum and water and Paris green. Have you heard of such a mixture for preventing the apple scab, the fungi on the apple?

Dr. FLETCHER: Yes, there has been a recommendation made during the last two years in the United States to use pure coal oil. At the present date, both in the States of Maryland and in New Jersey where it has been tried very carefully there are a great many injured trees from the application of that remedy. There is a special pump made by which the water and the coal oil are vaporized, broken up into very fine particles by the same machine. If anything gets out of order you are apt to do a great deal of injury, and hence they have not become very popular. The other remedy for the San Jose scale was to spray with pure coal oil on a bright day with a very fine nozzle. Anyone that has seen any spraying at all knows that if you have not fine weather the nozzle gets out of order very easily. It is better to use a weak solution and repeat it than to use a strong one and take the risk of losing all.

A DELEGATE: Tell us the solution for the San Jose Scale?

Prof. FLETCHER: Two experiments in the United States have shown that the only remedy that has given what we may call even good results is this pure coal oil, which is too dangerous for anyone to adopt, and the other is caustic potash or whale oil soap as strong as two pints to one gallon of water, which is a very expensive application.

SHOULD ONTARIO BE REPRESENTED AT THE PARIS EXPOSITION?

Mr. McNEILL: I am convinced that this Province should be represented at the Paris Exposition of 1900. It is on the back of the programme, and should be attended to at this session, as to-night is not a favorable opportunity, and I take the opportunity of making a motion in regard to it and offering a few remarks. I am sure it needs no words of mine to convince the people here that it would be to the advantage of everybody concerned that there should be a representative at the Paris Exposition; not that we care particularly for our trade with the French people, but that we care with our reputation with the world, and the world will be there. Therefore I take for granted that every person in this hall to night would be glad if the Government would have a representative at this exposition. I therefore move:—"That the Provincial Government be requested to make an exhibit at the Paris Exposition of 1900." It is put very briefly, and I presume that the Secretary will transmit this to the proper channels, and that the proper means will be taken to make the opinion of this Association effective. I am perfectly certain too, that we are very anxious that our fruit exhibit should be creditable to us. We have a wonderful country here which has been misrepresented, and of late years much has been done, and successfully done, to combat the old ideas in reference to Canada, and the man who is put there to represent us will have a great deal to do with how this country appears before the world. I would therefore add to this motion, "that this Association recommend that William Orr be in charge as a representative of the fruit men in Ontario." I do this because of his long experience in fruit growing, because of

his success in connection with the Chicago Exposition as far as he had charge of any part of it, and because of the experience that he has got throughout the province in connection with these spraying experiments. He has, perhaps more than any other man that I could name at the present time a knowledge of the exact resources of the Province in this line. I am sure you will all agree with me that no man is more worthy to represent us creditably there than the gentleman I have mentioned.

Mr. A. H. PETTIT: Allow me to second that resolution.

THE PRESIDENT: I do not think we have time for any general discussion unless there is any objection to this resolution, so I will just put it without discussion.

The resolution put and carried unanimously.

THE FRUIT GROWER OF THE FUTURE.

BY E. MORDEN, NIAGARA FALLS, ONT.

The fruit grower of the present is very often a failure. Very often he lacks scholastic training; very often he knows little of the sciences that underlie his particular industry. He lacks practical knowledge; he lacks mechanical dexterity; his soil is often unsuitable; his location as respects markets is often wrong.

Often he is a city man, a business or professional man, a mechanic or a "transmogrified," slip shod farmer. Fruit growers must compete with men who are favorably situated.

The coming Fruit grower to succeed must be fully equipped. He will not be an ignorant man; he will have a fair understanding of the laws of nature that are operating all around him. He will therefore study the sciences which underlie his business; he will know of the elements and their combinations as found in the soil, the atmosphere and the plants. He will be familiar with effects of heat, light and electricity. He will have a knowledge of insects of fungoid growths; he will understand the insecticides and fungicides; the whys and wherefores in their use will not be mysteries to him.

He will actively aid legislative measures for stamping out insects and diseases; he will not stupidly refuse to destroy trees affected with peach yellows or other diseases because he has inherited some past theory from his grandmother. His wife will doubtless know why milk sours and thickens and cream rises; why the bread or cake rises. She will know all about fermentation; the sweetest of women should know how to make vinegar.

The coming fruit grower will have an accurate knowledge of fruits, their varieties culture and management. The coming fruitgrower will know how to handle his trees and do his work; he will possess mechanical dexterity in his own particular line—very few, even of farmers, can handle a hoe properly; he will see that the right thing is done in the right way and at the right season. He will not be a grower of weeds.

The coming fruit grower will not dabble much into other kinds of business, for although the general farmer has many advantages over other men, he cannot well be a general farmer and a general fruit grower. He may, however, successfully grow one or two kinds of fruit. A poor farmer does not make a good fruitgrower.

The coming fruit grower will operate with a suitable soil. He can buy good land far cheaper than he can make it. A hard clay, a poor sand, or a swamp, will be dear at any price.

The coming fruit grower will locate near to markets or shipping points. The farmer from away back, who expects to team berries for many miles and compete with a fully equipped fruit grower located near the city or town, courts disaster.

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The coming fruit grower will plant varieties that will yield large crops suitable to the demands of consumers. Let us hope that the coming consumer will be educated to consider quality in making his purchases. To get the required varieties the grower will deal directly with responsible nursery men. He will when the fruit is produced hold that responsible nursery man to strict account for wrong fruit trees or plants furnished to him. The discouragements of present growers along this line should suffice for several generations.

The fruit itself will be reformed. The poorer samples will not cluster in the lower portions of the packages while their fairer friends are pushed up to the top. By some method of inspection or rejection the coming fruit will be what it seems.

The fruit commission-man will be reformed or extirpated. Growers cannot much longer produce fruit to increase the joys of express companies and commission men. The beautiful fruit which it has taken a lot of pickers' hours to prepare in good shape for transport is now shamefully and hopelessly bruised by express men in a few moments. Cheaper, better and more varied means of transportation we must have. When the future trolleys permeate our country in all directions reaching many villages and country places, fruit will be better distributed. How many farmers in the clay portions of Lincoln and Welland are supplied with peaches and many other fruits that are almost or altogether going to waste in the fruit growing sections.

We do not now reach the large home market in our own counties. In many of our counties there is no large production of the fruits generally. Their townspeople pay a pretty good price for the well bruised result of the express man's energy, while we pay him a high price for bruising it.

In the rural sections of much of Ontario where at least during the summer months fruit should constantly appear on the tables it is rarely seen. When the future farmer lives up to his best interests in this connection there will be a marvellous expansion of the home market. The commission man ought to become a direct buyer. In time his agents will meet the fruit growers at the stations and buy directly. Near the large American cities this system is in vogue. Growers there have had their fill of the commission business. We have had our fill. Emptiness is perhaps the proper word. The other fellows have been filled at our expense.

The coming fruit grower will recognize four principal points of the compass. The present one knows only three—east, west and north. He has not learned that there is a south which shelters millions of trained fruit eaters who, after their own season has passed, must get fruit from the north. The idea that southern fruit may find a northern demand is already well understood. The idea that later northern fruit may find a southern demand has not penetrated the cranium of the Canadian fruit grower. It will do so in time. From July 1st, 1893, until late in 1897, Canadian small fruit entered the United States free of duty. In the year 1896 nearly \$36,000 worth of small fruit entered Buffalo. I have not the figures for Detroit and Niagara Falls, but I know that immense quantities were entered at those points. Buffalo and Detroit by what we should call a lucky chance are placed contiguous to the two principal fruit growing centres of Ontario. This southward current of Ontario fruit was increasing in volume at a rapid rate. With a free entry it would soon have counted many thousands and would have penetrated further and further south. Who would have been hurt by this state of affairs? Not the American fruit consumer; not even the American fruit grower, because his season of fruit production would be past. The Canadian fruit grower was liable to suffer; he would have been called upon to carry around a load of money which just now would be a queer experience. He would have perspired freely in producing fruit for those who wanted it; now he perspires in his efforts to sell fruit to those who don't want it.

The effect of throwing back upon fully supplied local markets the \$36,000 worth of small fruit that found an outlet at Buffalo is of course disastrous to us. What were our Canadian fruit growers doing during the fourteen years of free entry into the United States? Clamoring for the exclusion of American fruits, and succeeding in their efforts.

Competing with the Americans in their own markets and asserting that we could not compete with them here. At last our long-suffering neighbors gave us a dose of our medicine and it was not good to take. When we come to the larger fruits we find that many of the western states will never produce them largely. We can produce them. Our winter apples are of good quality. They keep well. Our nearest and surest market is to the west and south. Why should we refuse to occupy the markets that call for our fruit? Why refuse to accept ordinary fruits from the south which mostly arrive when we have none. We have all along given a free entry to the fruits of the extreme south. These, arriving at all seasons, have done us much more harm than has resulted or would result from the influx of the more northern fruits. Housekeepers who can secure a cheap supply of oranges and bananas do not, in most cases, *can* our summer fruits.

The coming fruit grower will not only enjoy free markets abroad, but will have a free market at home. He will not be fined ten cents for feeding his fellow-countrymen who happen to live in towns or cities. Just now in Ontario we find that hay, grain, dressed hogs, lumber, laths, shingles, wool, and under certain circumstances, butter, eggs and poultry, are exempted from the operation of the market fee tax. Thus it will be seen that the general farmer is exempted while the fruit and vegetable grower is still taxed. This unjustifiable discrimination against fruit growing should be remedied speedily. The future fruit grower will pay his own municipal taxes, but will not be taxed by the town which he visits in order to sell his fruit. The future fruit eater will not erect barriers to prevent himself from getting fruit to the very best advantage.

The fruit grower, in pursuit of his customers, meets with too many barriers without contending with Legislative barriers.

The PRESIDENT: Before closing the meeting there is a paper I would like to have read by Mr. William Armstrong of Queenston.

Mr. BURRELL: That is an important subject particularly to this district, because in spite of the talk of over production last year the peach industry is about the most important in this district, and 75 per cent. of the whole of the peaches that we produce were simply second grade peaches; so we do not overproduce the good fruit, and this question of training and pruning properly to get good fruit is a very important subject to this section, and I feel that we should get that at once and properly explained by Mr. Armstrong in ten minutes.

The PRESIDENT: I have hurried through the programme with the view of giving Mr. Armstrong a place.

Mr. ARMSTRONG then proceeded to show his method of pruning peach, using samples of trees which he had brought in for the purpose. In the absence of illustrations it is impossible to report his method.

HOUSE PLANTS.

By WM. GAMMAGE, LONDON.

Fashions come and fashions go, but the fashion of cultivating plants and flowers is pre-historic. It is ever on the increase, for as man's grosser wants are supplied, new necessities arise which must be satisfied, and what we considered luxuries a few years ago are the necessities of to-day. The production of flowering plants is a recognized industry of the country. A vast amount of capital is invested in it, and large numbers are employed in the production of nature's beauties. Plants and flowers are now as much of a necessity to the complete furnishing of the modern home as are some of the more useful articles. Nothing lends elegance to its surroundings or to the complete furnishing of a room like a perfect specimen of the palm family; and the ease with which they are

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grown and cared for has not been generally known. Now that the public are becoming more acquainted with the case of their culture, the demand has increased until it requires thousands annually to supply the demand, where a few years ago dozens were ample. Nor is the demand confined to the Palm alone for house decorating, but Ferns, Ficus, Dracaena, Pandanus, Aspidistra, etc., each have their admirers. Failure or success in growing house plants depends almost wholly upon the person in attendance; situation, soil, water and pots are secondary considerations, but to be successful the peculiar requirements of each species must be studied, and even varieties of one species. In the ordinary living room the hot, dry atmosphere is certain death to most plants; therefore the cooler rooms should be selected. Do not attempt to grow flowering plants in a room where much gas is burned, that is if you want them to bloom; the amount of sulphur in the gas will cause the bloom to either drop before developing or develop an off color or a deformed flower. Gas has no effect worth mentioning on such plants as Palms, Ficus (rubber tree), Aspidistra, etc. Their only requirement is a sufficient and constant amount of care in giving light, air and water.

In the care of decorative plants, such as the above mentioned, avoid the use of commercial fertilizers, and that erroneous but widely practiced fad of dipping the plants with castor oil. The injudicious use of fertilizers has killed more valuable plants than it has ever been the means of benefiting. The use of castor oil, too, although not so quick in its action, is sure death to the subject. In my experience as a commercial florist I have found that when plants require feeding there is nothing like animal manures, and even with this mild form of stimulant too much care cannot be exercised in its use. When mineral or commercial fertilizers are used the time of application depends on the ingredients; if they contain nitrogen as the main manurial substance, they must be applied during the growing season, as plants assimilate this substance immediately; if phosphoric acid or potash is the main ingredient, then it should be applied before needed, or in other words should be incorporated with the soil in the compost heap. As plants take this form up slowly it is likely to remain in the soil until the roots take action upon them and make them soluble. It is a well known fact that all plants take their food in the form of solution, and almost exclusively direct from the soil by their roots. Nitrogenous manures are needed only to induce free growth of wood and foliage, the phosphates and potash give substance to the wood and color to the flower. In the preparation of the soil for decorative plants I would recommend the following as a compost: 50 per cent. clay loam sod, 20 per cent. jadoo fibre, 20 per cent. leaf mould, 10 per cent. well rotted cow manure. This mixture will answer for almost all varieties of palms, ferns, soft and hard wood decorative plants. For flowering plants, such as begonias, cyclamen, primuli, etc., a light rich, fibrous soil is required. As a rule, hard wooded plants require a heavier soil; also geraniums, fuchsias, cinerarias, and all varieties of liliun, do better in a rich, heavy soil. Care should always be exercised to see that the soil is taken from some high and dry land; a rich pasture or unbroken ground always being preferable. The more fibre your soil contains the less liable it is to sour, and the sooner your plants take hold of it.

Light, air, and water are indispensable to plants, as to man. Avoid the too frequent habit of crowding or huddling a lot of plants together, and thus producing the poor, puny, drawn, long-leggy plants that we see. Better to have a few, and have them sturdy, robust, and well matured. Give all the fresh air possible. Once a week is not too often to give them a total immersion, or to wash all the foliage. Perhaps the most important of all in the cultivation of plants is the knowledge of how and when to water; it is a knowledge that can be gained only by experience. It is one of the greatest difficulties we have to contend with in greenhouse work, to get men who thoroughly understand the art of watering. It is always safe to be on the dry side, for once the soil is soured by over-watering the growth is immediately checked, and will not again start, until chemical action has again taken place in the soil. Care must also be taken to see that the pots are not too large for the plants; this is a common error, one that we meet with every day. A customer will come to the conclusion that a plant needs repotting, and immediately acts on the impulse of the moment, going out into the garden and taking the first convenient soil; next a pot is selected two, or three, or perhaps four, sizes larger than

the one from which the plant is to be removed; no drainage is provided, but the already sickly plant is put into the large pot with the poor and too often sour soil, and then watered and watered; then because it does not grow it is given stimulant in the way of liquid manure, whereas most likely the only thing that the plant required was to remove some of the soil, put it back into the same pot with fresh soil, and water sparingly until such times as it had made a new growth.

Bulbs for house culture give excellent satisfaction, commencing with Roman Hyacinths and paper white Narcissi, a succession of showy bloom can be had from early November until the spring. No special preparation of soil is required; they do equally well in any kind of soil, or any situation. After being brought from the cellar they require an abundance of water and a moderate temperature to produce the best results.

Mr. WHYTE: What proportion of jadoo do you use?

Mr. GAMAGE: Twenty per cent.

Mr. WOOLVERTON: Is it easily got?

Mr. GAMAGE: Yes, from almost any seed house. It is sold at about three cents a pound, or \$27 or \$28 a ton. It has the appearance of peat. It undergoes some chemical process. It is imported from England. Speaking of watering plants Mr. Gamage said: Most people imagine that when a plant is potted in a large pot it needs plenty of water. That is not the case. After re-potting give it a thorough watering and allow it to dry sufficiently so that the roots will begin to work in it. If it is watered till the soil is scoured the organic acid that is in the roots does not have power to make sufficient nutriment to take it up. People after watering plants think the soil is not rich enough and they go and give it liquid manure. This will almost always kill the plant.

Mr. BRODIE: Do you also attempt to use the bone meal as a fertilizer?

Mr. GAMAGE: It depends on what you are going to use it for. We use tons of it every year, but we mix it with our soil for months before we begin to use it.

Mr. WHITNEY: In potting lilies do you place sand around the bulb?

Mr. GAMAGE: Not necessarily. We use a proportion of sand in the soil, enough to cut it so that you can feel the sand.

Prof. HUTT: Mention the best dozen plants you consider most suitable for house collection.

Mr. GAMAGE: In the way of decorative plants, the Palms, Ficus (rubber tree), Pandanus, Grevillea, etc. Here is one that will stand rough treatment in any situation whatever—the *Aspidistra*. The *Begonia* gives a good deal of satisfaction. Coming on at this time of the year we have the *Cyclamen*, and the *Calla lilies*. Nearly all the varieties of ferns are hardy; *Pteris tremula* is probably the best.

Mr. WHYTE: You shook the flowers of the *Begonia* to show the injury done by gas light; was all that damage done since the flower came into this room?

Mr. GAMAGE: Yes.

Mr. WHYTE: Was it not on account of the uneven temperature of the greenhouse?

Mr. GAMAGE: No: take one of these *Begonias* and put it into a room where there is a wood stove, and it will last for weeks and weeks without dropping either a leaf or a flower, but place it in a room where a gas or coal stove is burning, and oftentimes two hours will do it.

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HARDY PERENNIALS SUITABLE FOR CULTIVATION IN ONTARIO.

BY W. T. MACOUN, CENTRAL EXPERIMENTAL FARM, OTTAWA.

Flowers and fruit are so nearly akin that I think it is only right there should be one or more papers in connection with the Fruit Growers' Association on flowers. They are the most important, because if you had no flowers you could not have fruit. In traveling through Eastern Ontario and the Province of Quebec I noticed that our farmers have very few trees, shrubs or flowers growing on their farms. In olden times they began to clear away their woods, not thinking that the time would come when they would be glad of a few trees that they were so pleased to get rid of at that time. The result is that to-day in a great number of cases you will find that the farmhouse stands alone in a field without a tree for shade during the summer months, and with perhaps scarcely a flower to gladden the hearts of the wife and children and perhaps the householder himself. Now, I think this should not be, and it will be my aim always, whenever I have the opportunity, to impress upon farmers and fruit growers of the country how important it is to have some flowers in their place, and those of the best sort; so that I am going to bring before you this evening what I consider are the best hardy plants for this Province.

The plant which grows from the seed, flowers, produces fruit and dies the same year; or, in other words, an annual, does not possess, I think, the same charm as that which we have watched and cared for, perhaps for five years, and which, as time goes by, increases in size and beauty. Think of the old garden in which your younger days were spent, and there will come up in your mind's eye some favorite flowers and plants which had their places in some particular spot and which year by year appeared to gladden your heart and make your garden gay.

Many of the flowers which held a prominent place in the gardens of our forefathers are not to be surpassed to-day, but there are many more available since foreign countries have been opened up for exploration by our botanists and florists, and enthusiastic workers have produced others by selection and hybridization, until now we have a large and varied store of beautiful and many colored flowers. From this large number we can select those which please our fancy best and which are the most satisfactory.

It has been the aim at the Central Experimental Farm, Ottawa, to test as many species and varieties of perennials as possible, in order that the hardiest and best kinds would become known and be recommended to the farmers and horticulturists throughout Canada. The perennial border there is now more than half a mile long. It is on the east side of an Arbor Vitae hedge, and is twelve feet wide. There are three rows of plants—the latter being three feet apart each way. In this border there were living this autumn almost 1,200 different species and varieties of perennials. Notes are taken during the summer on the time of flowering, growth, color and other characteristics of the flowers, and the most promising sorts marked. In my report for 1897 a list was published of 100 of the best species and varieties that had up to that time been tested. A select twenty-five of these were marked with an asterisk for the convenience of those who had small gardens. There is reason to believe that this list has already proved of considerable value to intending planters.

The snow has barely left our fields and gardens when the Spreading Pasque flower (*Anemone patens*) throws up its flower stocks, at the ends of which are those large, deep, purple blossoms, which in the month of April help to relieve the otherwise dull appearance of the perennial border. Following this, in about two weeks, is the little Ox-eye (*Adonis vernalis*) which, with its large lemon-coloured flowers and finely cut foliage, is very attractive at this early season of the year. The Polemoniums or species of Jacob's Ladder, closely follow and are all profuse bloomers with flowers of various and delicate shades of blue. They flower in the following order:

Polemonium humile pulchellum, *P. Richardsoni* and *P. reptans*. *Polemonium coeruleum*, or true Jacob's Ladder, does not bloom until the second week of June. All of these should be in every collection of 100 perennials.

The earliest white flower of note is the White Alyssum (*Arabis alpina*), which blooms in the first week of May. Were this to bloom later, it would be overlooked by lovelier flowers, but in the early spring its pure white blossoms are very attractive.

The most charming and graceful, perhaps, of all the early spring flowers, are the Barrenworts or Epimediums. Of these, the best are *Epimedium rubrum*, *E. pinnatum* (*sulfureum*) and *E. macranthum*. The brilliant coloring of *E. rubrum* and the bright yellow of *E. pinnatum* make a fine contrast. The leaves of these pretty plants are also very ornamental.

Most of our best composite flowers bloom in the summer and autumn, but the Leopard's bane is an exception. During the second week of May the Caucasian Leopard's bane (*Doronicum caucasicum*) begins to bloom. Its yellow flowers are very attractive at that early season of the year. Following this is *Doronicum plantagineum excelsum*, which is taller than the last and has still larger flowers and is the better of the two.

The Iceland Poppy (*Papaver nudicaule*) is now becoming more generally grown. Its yellow, white, or orange flowers are very pretty. Other chief points of merit are earliness and continuity of bloom, as the flowers appear early in the spring, continue through early summer, and, after a short rest, open again in the autumn. The Oriental Poppy, which is not in bloom until about three weeks later, is, I presume, well known to you all. Its immense scarlet flowers of great brilliancy make it a very effective plant.

Among the most showy of the spring flowers and the most attractive of those that bloom in the summer and early autumn are the Phloxes. The Moss pink (*Phlox Subulata* Syn. *P. setacea*) is one of the old-fashioned perennials which is still used for bedding or borders. Its deep pink flowers are very effective during the month of May. Other good early flowering sorts are: *Phlox amoena* and *Phlox reptans*. *Phlox ovata*, which begins to bloom in the first week of June, is very desirable. The flowers are of a lovely shade of pink and keep open for a long period. Those perhaps which are most grown are the varieties of *Phlox decussata*, usually known as the Hybrid Perennial Phlox. There are now so many named varieties of this Phlox that it is not difficult to find some which are satisfactory.

The old-fashioned but still popular flower, the Bleeding Heart (*Dicentra spectabilis*), is very showy during the latter half of May. It begins to bloom about the middle of the month and remains in flower for more than four weeks.

All the Columbines are lovely flowers, but there are a select few which are deserving of special note. The first to bloom of these is the Russian Columbine (*Aquilegia oxysepala*), distributed some years ago by the Ontario Fruit Growers' Association under the name of *Aquilegia Buergeriana*, which it was supposed to be at that time. The flowers are large, deep purplish blue with yellow and blue centres. Following this are *A. glandulosa*, deep blue with white centre; *A. Stuarti*, deep blue with white centre, which is often a biennial, and *A. Canadensis*, our native wild Columbine. Toward the end of May, *A. coerulea*, one of the most delicately shaded and graceful species, is in bloom. The season of the Columbines is extended considerably by *Aquilegia chrysantha*, which does not bloom until about the fourth week of June. This is a magnificent species, attaining a height of four feet. The flowers are bright lemon yellow and very showy. There is a white-flowered variety of this which is also very fine.

With the opening of the pretty little dwarf Iris, (*Iris pumila*) during the third week of May, there begins a succession of lovely and many coloured species and varieties which go a long way to make our gardens attractive during the summer. Closely following *Iris pumila* is another dwarf species, *Iris Chamaeiris*, which is bright yellow with brown marking. The Siberian Iris with its numerous varieties now follows, and although these are not so graceful or pretty as some of the other sorts, they have their place in the rear of the border, for they attain a height of from three to four feet. During the first week of June, *Iris flavescens*, a beautiful yellow species with brown markings, begins to bloom, and following this are those wonderful and varied forms of *Iris germanica*, *I. neglecta*, *I. pallida*, *I. squalens*, and *I. variegata*, which rival the

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FRUIT GROWERS' ASSOCIATION.

finest orchids in delicacy of colouring and grace of form. The Oris root (*Iris florentina*), which blooms about the same time, is a very handsome species. The flowers are large, pale blue or lavender, and sometimes white, and have a delicate perfume. This is one of the most desirable species. Following these and beginning to bloom when they are almost gone, is the Golden Iris (*Iris aurea*). This is undoubtedly one of the most handsome species grown. The flowers are large and of a deep rich yellow color. These with a height of from 3 to 4 feet, give it a stateliness and beauty unsurpassed by any other yet tested at Ottawa.

The Japanese Irises, which are giving good satisfaction in a diversity of soils at the Experimental Farm, have an entirely different form from any of those previously mentioned. They have not the grace of many of the other species and varieties, but their colouring is exquisite, and they bloom during the month of July, when other Irises have disappeared.

The Globe flowers, or Trollius, which remind one of a buttercup, but which are larger and richer in colouring, begin to bloom during the third week of May and are the among the best of spring flowers. *Trollius Europæus*, *T. giganteus*, and *T. Ledebourii* are three of the best.

Time will not permit me to speak of other spring flowers, such as the Evergreen Candytuft, *Iberis sempervirens*, the Prophet Flower (*Arnebia echioides*), the Li y of the Valley (*Convallaria majalis*), and others.

During the first week of June the Spiræas begin to bloom and keep up a succession of white, cream and pink flowers until well on in the summer. The best of these bloom in the following order: *Spiræa Filipendula* fl. pl., *S. astilboides*, *S. palmata elegans*, *S. Ulmaris*, and *S. Venusta*. Of these, *S. Filipendula* flore pleno and *S. Venusta* are deserving of special mention. The former has pure white double flowers and is about 2 feet tall; the latter, has deep pink flowers and is 4 feet or more in height.

During the first week of June the bright scarlet flowers of *Heuchera sanguinea* begin to appear, and this charming and graceful plant continues to bloom until late in the autumn.

Most of the hardy perennial pinks have comparatively small flowers, but in some of the named varieties of *Dianthus Plumarius* flore pleno there are flowers which are almost equal to the best carnations. Mrs. Sinkins is one of these. The flowers of this variety are large, double white and highly perfumed. It is quite hardy and should be in every collection.

The Hemerocallis, or Day Lillies, contribute largely to the appearance of the perennial border during the summer months; the best of these are: *Hemerocallis Dumortierii*, *H. minor* and *H. flava*, which bloom in the order given. A new variety from Japan, *H. aurantiaca major*, promises to be a good introduction.

It is in June and July that most of the lilies are at their best, and there are so many varieties of these beautiful flowers that it is necessary to limit oneself to the very best. *Lilium canadense*, *L. tenuifolium*, *L. elegans*, *L. tigrinum*, *L. superbum*, *L. auratum* and *L. speciosum* make a succession of bloom from June until September.

There are several species of *Coreopsis* which enliven the flower border from the latter part of June until autumn. Of these the most satisfactory tested at the Experimental farm is *C. lanceolata*, the flowers of which are large and deep yellow. *C. grandiflora* is very fine, but has not proved perfectly hardy at the Experimental Farm. There is a variety of this Golden Glory which has been lately introduced, which we have not yet tested. *C. delphinifolia* is quite different from the two preceding species, the flowers having dark centres.

The Gaillardias are among the most satisfactory flowers as they continue to bloom for such a long time. Beginning about the third week of June, there is a continuity of bloom until late autumn. The flowers of *G. aristata grandiflora* are very large and of fine colouring, the petals being of a deep yellow more or less tinged with orange, and orange at the base. Some of the named varieties of this are still better, such as *Superba* and *Perfection*.

Other fine flowers which begin to bloom in June are : *Achillea Ptarmica flore pleno*, *Anthemis tinctoria kelwayi*, *Clematis recta*, *Dictamnus albus*, *Linum perenne*, *Oenothera Missouriensis*, and the hybrid *Potentillas*.

Most of the Campanulas begin to bloom in July. Of these, some of the best are : *Campanula carpatica*, *C. Persicifolia*, and *C. latifolia macrantha*. The *Platycodons*, which are closely related to the Campanulas, are very desirable plants with large, deep blue, striped or white bell-shaped flowers. They are all varieties of *P. grandiflora*. The beautiful Cashmerian Larkspur (*Delphinium cashmirianum*) is deserving of special mention. It begins to bloom about the first week of July, and its bright blue flowers continue to be seen until autumn. There is a pale blue form of this which is also fine. These Larkspurs only attain a height of from one and a half to two feet.

No garden is complete without a few pæonies. There have been such great improvements in these flowers of late years that the intending planter should make enquiries before buying, so as to get the very best varieties.

Perhaps no plant of recent introduction has become so popular, and deservedly so, as *Rudbeckia laciniata*, Golden Glow. Introduced only four years ago, this plant has now become almost as common as many of the old varieties. Unlike most plants of great merit, it multiplies rapidly, and it has thus been possible to supply all demands for it. It begins to bloom about the latter half of July and continues until late in the autumn. The flowers are large, very double and of a bright lemon-yellow colour, almost equalling a chrysanthemum of the same size and colour. It is a profuse bloomer and attains a height of from six to eight feet.

Some other fine flowers which begin to bloom in July, and which there is not time to take up individually, are : *Aconitum Napellus*, *Eriqeron speciosus*, *Gypsophila paniculata*, *Helensum autumnale*, *Lychnis chalcedonica fl. pl.*, *Rudbeckia maxima*, *Heliopsis pitcheriana*, *Scabiosa caucasica* and *Statice latifolia*.

During the months of August, September and especially October, the Michaelmas Daisies, or wild asters, help to extend the season of perennials. These flowers are now so common in our woods and waysides that they are not valued as they should be, but when brought into the garden they become most attractive during the autumn months. The best of our Canadian asters is probably *Aster Novae-Angliae roseus*. The flowers of which are bright pink. Several species and varieties which were obtained outside of Canada, and which are of the most exquisite shades of purple, pink, white and lilac, are : *Aster Amellus bessarabius*, *A. alpinus*, *A. Newry seedling*, *A. laeviagatus*, *A. undulatus*, *A. turbinellus*, the latter blooming until late in October.

There are a few other late blooming plants worthy of note, namely : *Aconitum Fischeri (autumnale)*, *Funkia subcordata (grandiflora)*, *Helianthus doronicoides*, *Helianthus laetiflorus*, and *Hibiscus moscheutos*.

Though perennials thrive best when given good soil and good cultivation, a large number of them will also succeed with very little attention, and it is this fact which makes them valuable to the busy man, the lazy man, and the man who only grows them because he thinks it is the proper thing to have some flowers about his place. Once established, many perennials will hold their ground, though often shamefully neglected.

Mr. GAMMAGE : I suppose the varieties you have mentioned are all perfectly hardy at Ottawa ?

Mr. MACCOUN : Yes. The great secret of preserving some perennials is to give them a good mulch of straw in the autumn when winter sets in. They can be got in the United States, or be got still cheaper by sending to Holland for them, and anyone wishing to get any of those can secure from me the names of firms in Europe or the United States who will supply them. First of all I would recommend you to apply to our Canadian nurserymen. Dr. Saunders reminds me that the seed can be had of a great many of them in the United States and in Europe.

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REPORT ON HORTICULTURAL SOCIETIES FOR 1898.

The number of affiliated societies in operation as reported at the annual meeting of the Fruit Growers' Association of Ontario in December last was twenty-seven, with a total membership of 2,076. I now find from the list as published in the last Annual Report that the number of societies for the year 1898 is given as thirty-six, with a total membership of 2,610. Omitting from this list Burlington society where the membership is not given, and the Paris society, for sufficient cause, the true number of societies for 1898 is thirty-four and the membership 2,551. My work this year, which is now about concluded, will I venture to hope add several new societies to the list for 1899, which, if a corresponding aggregate is maintained, will make the membership from these societies something over 3,000 for the year 1899.

As the yearly aggregate and the yearly average of membership of each of the affiliated societies will be an increasingly interesting item for comparison with future years, I add the following comprehensive table commencing with the year 1895, which should be continued, or added to, for many a year to come :

Year.	No. of societies in affiliation.	Aggregate of membership.	Average per annum for each society.
1895.....	11	798	72.5
1896.....	17	1,197	70.4
1897.....	27	2,076	77.0
1898.....	34	2,551	75.0

I wish also to call the attention of the Board to the desirability of having a skeleton draft of by laws suitable for the guidance of the horticultural societies prepared as quickly as possible, and that a copy with the necessary instructions for their adoption be sent to each society.

Most of these societies are doing excellent service for our country and are deserving of every encouragement and assistance that can be given by the Fruit Growers' Association of Ontario.

THOS. BEALL.

In accordance with this suggestion, the directors afterward appointed Mr. Beall and the secretary a committee to draft the by-laws. (See page 54.)

REPORT OF COMMITTEE ON FRUITS ON EXHIBITION.

We, your committee, find on exhibition the following fruits :

Shown by T. R. Merritt, St. Catharines: Two varieties of Rogers, Niagara and Vergennes grapes in a good state of preservation and of fine quality; fine samples of Columbia, Clairgeau and Lawrence pears; Rhode Island Greening, Rox. Russett, Ben Davis, Baldwin and Fall Pippin apples, also a fine display of hot-house plants, including two specimens of Australian ferns.

A. M. Smith, St. Catharines, has fine samples of Duchess d' Angouleme, Anjou, Lawrence, Josephine de Malines pears; Champion quinces and Sutton Beauty apples, the latter a new claimant for public favor.

E. H. Wartman, Kingston, shows thirteen varieties of apples grown by Jas. Russell, of Wolfe Island, namely, Cayuga Red Streak, Colvert, Blenheim Orange, Cabashea, R. 1. Greening, Tolman Sweet, Baldwin, Gilliflower, Snow, Seek-no-Further, Grimes Golden, all of excellent quality.

Robert Thompson, Grantham : Extra fine samples of Pomme grise and Baldwin apples.

Mr. Thomas Beall, Lindsay, shows fine Hulbert, Snow, Lawver, Ontario, Swazie Pomme grise, Ben Davis, Baldwin, Red-Cathead, Nodhead and a Snow apple that appeared to be a relative of the Duchess, but late and larger, of good quality, and evidently worth propagating.

Martin Burrell, St. Catharines, shows fine Vandevere apples, Lawrence and Duchess de Bordeaux pears, also a specimen of native of Japan chestnuts, showing a marked difference in size.

W. M. Orr, Fruitland, shows an excellent sample of Vergennes grapes, also Kieffer, Duchess and Clairgeau pears of the finest quality.

Jas Scarff, Woodstock, has Talman Sweet, Bellflower, Baldwin, Wagner, Spitzenberg, King, Spy, Blenheim Orange, Russett, Snow, Cabashea, R. I. Greening apples; also fine samples of Duchess and Clairgeau pears.

The Experimental Farm, Ottawa, shows twenty-two varieties of hardy apples, most of them of Russian origin and particularly adapted to northern sections.

R. L. Huggard, Whitby, has eight varieties of apples and twenty-two of pears, most of them of fair quality.

Hugh Gourley, Carp, Ont., shows a fine collection of apples for that northern latitude, consisting of Winter St. Lawrence, McIntosh Red, Colvert, Canada Baldwin, Snow, Wolf River, and four varieties, names unknown, but of fine appearance, and several seedlings of Snow very similar to their parents.

There are also fine plants from the green-houses of Mr. L. D. Dunn, St. Catharines, and an orange tree in fruit from James Danlop & Son, St. Catharines, also three plants from Mr. Groom, grocer, St. Catharines.

There was also shown a sample of Hawthorn jelly, exhibited by Mr. F. G. H. Patterson, Grimsby.

A. M. SMITH.

A. H. PETTIT.

IN MEMORIAM.

Moved by THOS. BEALL, seconded by M. BURRELL,—“That we, the members of the Fruit Growers' Association, desire to place on record our sense of the loss the Association has sustained by the death of Mr. James Lockie, of Waterloo, and of Mr. Richard Trotter, of Owen Sound. Mr. Lockie, as President of the Waterloo Horticultural Society, did much to develop the growth and usefulness of that organization, and by his knowledge and enthusiasm contributed largely to the promotion of a healthy interest in horticulture generally.

“The late Mr. Trotter accomplished much useful work in the direction of organizing and testing varieties of fruit. He was also the leading spirit in organizing the Owen Sound Horticultural Society.

“We desire not only to testify to the sense of our own loss, but to express a very sincere sympathy with the relatives of these two highly-esteemed members of our Association.”

- Arnprior
- Belleville
- Brampton
- Brockville
- Burlington
- Campbellford
- Carleton Place
- Cardinal
- Chatham
- Cobourg
- Durham
- Grimsby
- Hagersville
- Hamilton
- Iroquois
- Kemptville
- Kincardine
- Leamington
- Lindsay
- Mexford
- Midland
- Millbrook
- Napanee
- Niagara Falls S
- Oakville
- Orangeville
- Owen Sound
- Paris
- Pictou
- Port Colborne
- Port Dover
- Port Hope
- Sarnia
- Seaforth
- Simcoe
- Smith's Falls
- St. Catharines
- Stirling
- Thornbury
- Trenton
- Waterloo
- Woodstock
- Windsor

LIST OF AFFILIATED HORTICULTURAL SOCIETIES.

Name.	President.	Secretary.	No. of members, 1898.
Arnprior	Claude McLachlin.....	G. E. Neilson.....	55
Belleville	W. C. Reid.....	W. J. Diamond.....	68
Brampton	A. Barber.....	Henry Roberts.....	115
Brockville	Samuel Reynolds.....	Geo. A. McMullen.....	85
Burlington	A. W. Peart.....	W. F. W. Fisher.....
Campbellford	J. B. Ferris.....	E. A. Bog.....	56
Carleton Place.....	A. H. Edwards.....	J. A. Goth.....	57
Cardinal	Wm. Beddie.....	E. E. Gilbert.....	58
Chatham	W. D. A. Ross.....	G. E. Massey.....	80
Cobourg	J. D. Hayden.....	H. J. Snelgrove.....	91
Durham.....	Chris. Frith.....	Wm. Gorsline.....	97
Grimby	Mrs. E. J. Palmer.....	E. H. Read.....	51
Hagersville.....	Wm. Harrison.....	S. W. Howard.....	57
Hamilton	A. Alexander.....	J. M. Dickson.....	115
Iroquois	W. A. Whitney.....	A. E. Overell.....	65
Kemptville	Angus Buchanan.....	T. K. Allen.....	55
Kincardine	T. W. Perry.....	Joseph Barker.....	99
Leamington	J. D. Fraser.....	E. E. Adams.....	51
Lindsay	Alex. Cathro.....	F. J. Frampton.....	113
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Midland	Frank Cook.....	Miss M. Tully.....	56
Millbrook	George Sootheran.....	W. S. Given.....	56
Napanee	Mrs. W. H. Wilkison.....	James E. Herring.....	59
Niagara Falls South	W. P. Lyon.....	†T. J. Robertson.....	75
Oakville	T. C. Hageman.....	W. W. Paterson.....	128
Orangeville	John McLaren.....	Wm. Judge.....	75
Owen Sound.....	Ven. Arch. Mulholland.....	D. R. Dobie.....	57
Paris	A. G. H. McCormick.....	Gordon J. Smith.....	55
Picton	J. R. Brown.....	W. T. Ross.....	75
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* Clarksburg P. O. † Niagara Falls P. O.

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