

THIRTY-SECOND ANNUAL REPORT

OF THE

FRUIT-GROWERS' ASSOCIATION

OF

ONTARIO

1900

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

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO.



TORONTO:

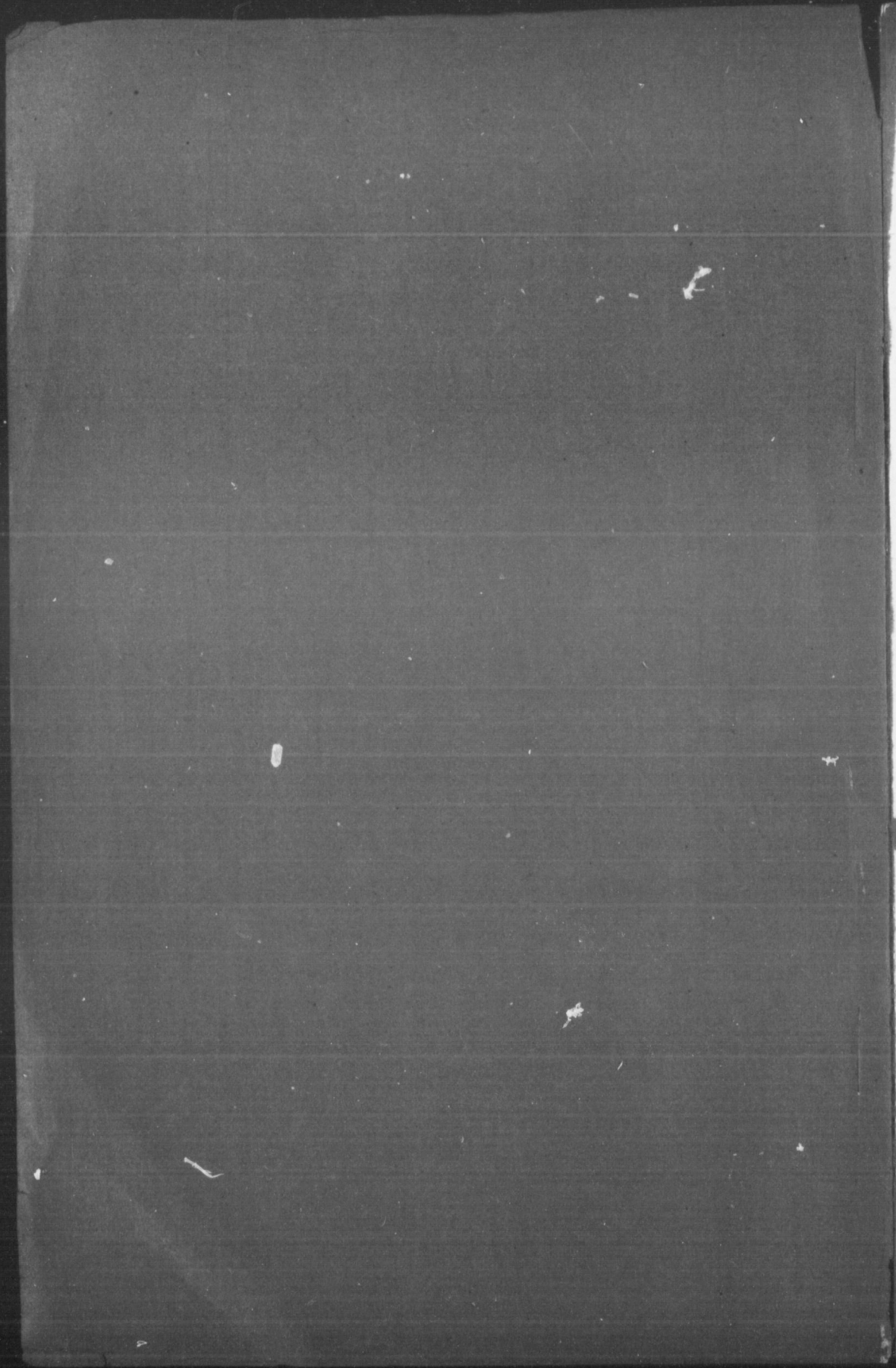
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Printer to the King's Most Excellent Majesty.

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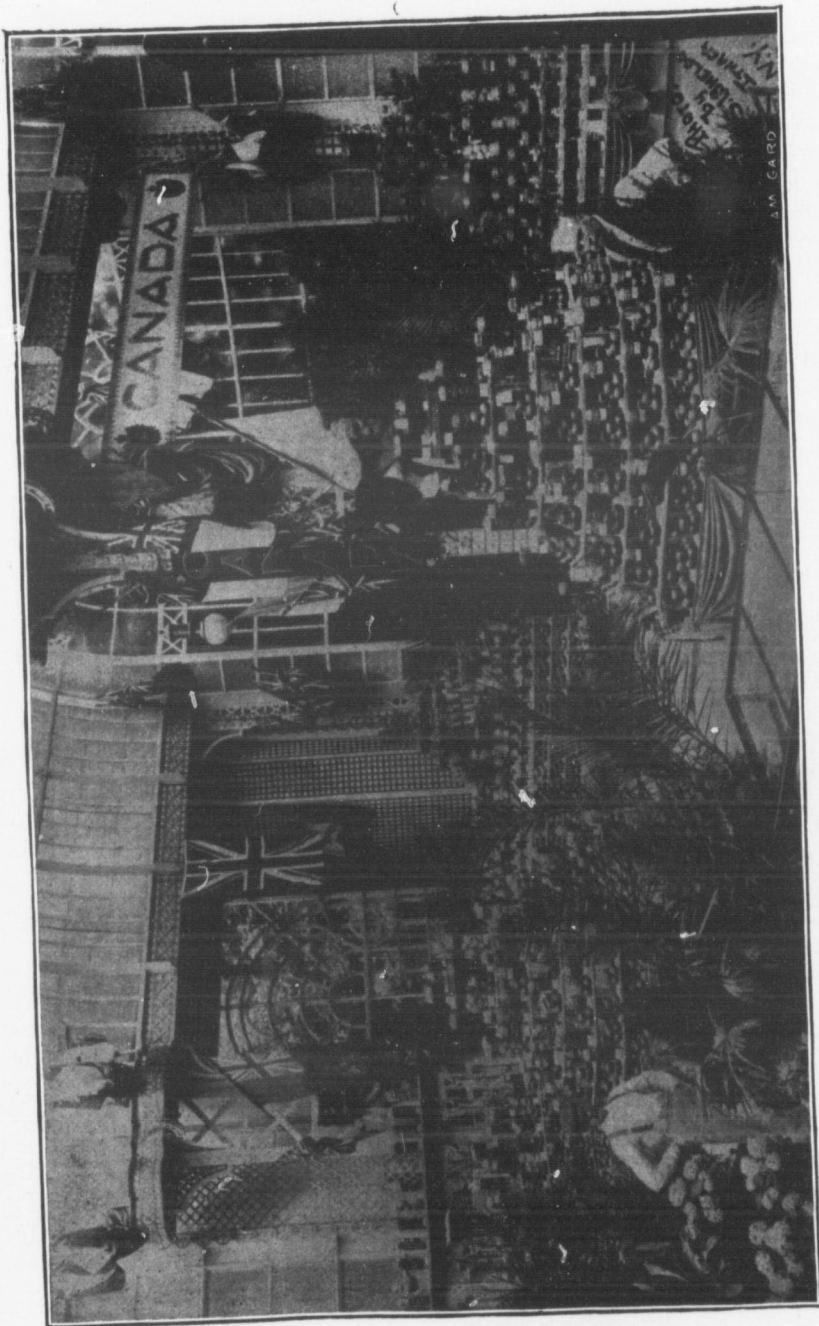


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THE CANADIAN FRUIT EXHIBIT AT PARIS, 1900.

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FORTY-FIRST* ANNUAL MEETING

OF THE

FRUIT GROWERS' ASSOCIATION OF ONTARIO.

1900.

To the Honorable John Dryden, Minister of Agriculture :

SIR,—I have the honor to submit the Report of the Forty-first Annual Meeting of the Fruit Growers' Association of Ontario. At this meeting especial prominence was given to methods advisable for checking the spread of the San Jose Scale, the revision of the proposed bill providing for the grading and inspection of fruit, and the development of the export trade in Ontario fruits.

I am, Sir,

Your obedient servant,

L. WOOLVERTON,

Secretary.

GRIMSBY, January, 1901.

* This Association was first organized in Hamilton in the year 1859, under the title of the Fruit Growers' Association of Upper Canada.

Secretary.

FRUIT GROWERS' ASSOCIATION OF ONTARIO.

OFFICERS FOR 1901.

President—W. M. ORR Fruitland.
Vice-President—G. C. CASTON, Craighurst.
Secretary-Treasurer and Editor of the Canadian Horticulturist—L. WOOLVERTON,
M.A., Grimsby, Ont.

DIRECTORS

Agricultural Division No	1—(Stormont-Cornwall)	W. A. WHITNEY, Iroquois.
"	2—(Lanark-Ottawa)	R. B. WHYTE, Ottawa.
"	3—(Frontenac-Brockville)	HAROLD JONES, Maitland.
"	4—(Hastings Prince Edward)	W. BOULTER, Picton.
"	5—(Durham-Victoria)	THOS. BEALL Lindsay.
"	6—(York Toronto)	ELMER LICK, Whitby.
"	7—(Wellington-Hamilton)	MURRAY PETTIT, Winona.
"	8—(Lincoln-Monck)	A. M. SMITH, St. Catharines.
"	9—(Elgin-Norfolk)	J. S. SCARFF, Woodstock.
"	10—(Huron-Grey)	J. I. GRAHAM, Vandeleur.
"	11—(Perth-London)	T. H. RACE, Mitchel.
"	12—(Essex Lambton)	ALEX McNEILL, Walkerville.
"	13—(Algoma-Manitoulin)	C L STEPHENS, Orillia.

AUDITORS.

A. H. PETTIT, Grimsby; GEORGE E. FISHER, Freeman.

COMMITTEES.

Executive.—President, Vice President and Secretary.
Finance.—W. M. Orr, M. Pettit, A. M. Smith.
Board of Control Fruit Experiment Stations.—W. M. Orr, A. M. Smith, Wellington
Boulter.
New Fruits.—Prof. H. L. Hutt, O.A.C., Guelph; Prof. W. T. Macoun, Central
Experimental Farm, Ottawa; L. Woolverton, Grimsby.
Transportation.—W. H. Bunting, A. H. Pettit, E. D. Smith, T. H. P. Carpenter,
Alex. McNeill, W. Boulter.
San Jose Scale.—M. Pettit, G. E. Fisher, E. Morris, W. M. Orr, Robt. Thompson,
W. H. Bunting, J. D. Wigle, Major Hiscott.
Grading and Inspection of Fruit.—A. H. Pettit, E. D. Smith, Elmer Lick, Major H.
J. Snelgrove, W. H. Bunting, G. C. Caston, E. J. Palmer, J. M. Shuttleworth, Eben
James, R. H. Ashton, D. J. McKinnon, T. H. Race.
Codling Moth.—Joseph Tweddle, E. D. Smith, W. M. Orr and A. H. Pettit.
Fruit Packages.—A. H. Pettit, L. Woolverton, E. D. Smith, D. J. McKinnon, W.
H. Bunting, Joseph Tweddle, W. M. Orr.
Industrial Fair.—W. E. Wellington, Murray Pettit.
London.—J. S. Scarff, T. H. Race.
Ottawa.—R. B. Whyte, Harold Jones.
American Pomological Society.—W. M. Orr, G. C. Caston, L. Woolverton, A. M.
Smith, M. Pettit.
Quebec Fruit Growers' Association.—Harold Jones and R. B. Whyte.
Life Members.—A. M. Smith, St. Catharines; D. W. Beadle, Toronto.
Honorary Members for 1901.—J. S. Clark, Bayview, P.E.I.; L. B. Rice, Port
Huron, Michigan.

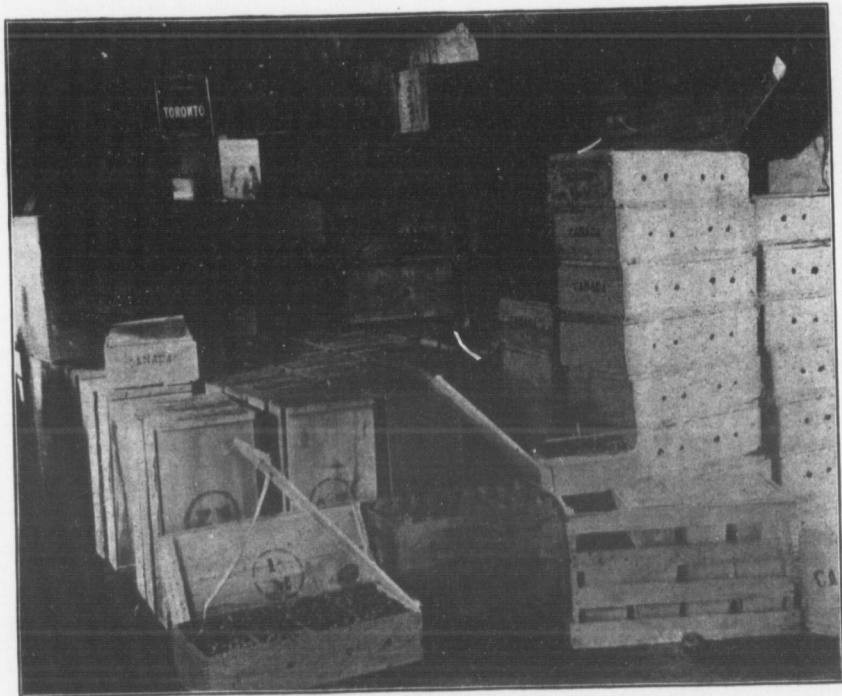
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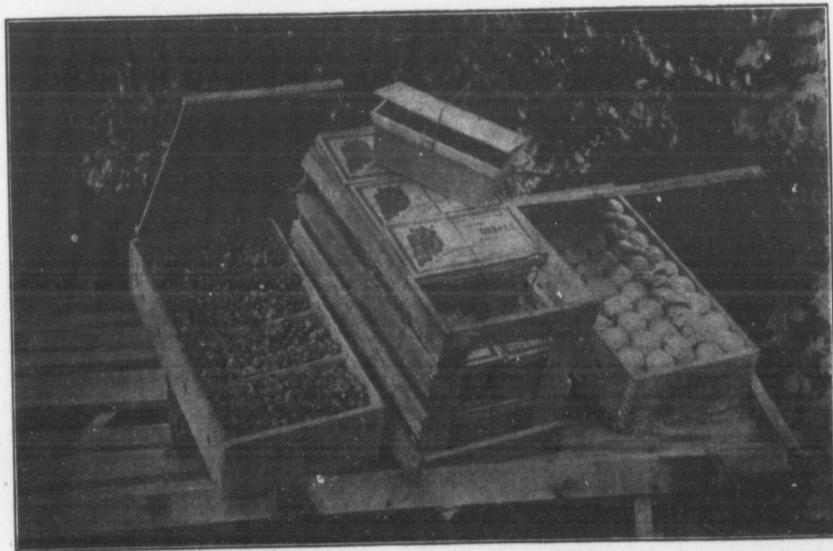
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M. Pettit. W. A. Whitney. Prof. Hutt. G. C. Caston. L. Woolverton. W. M. Orr. Thos. Bengough. A. M. Smith. J. S. Scarff. A. M. Smith.
 OFFICERS AND DIRECTORS FOR 1901 AT BRANTFORD MEETING.



BUSHEL BOXES OF APPLES, HALF BUSHEL BOXES OF PEARS AND PACKAGES OF GRAPES,
PACKED FOR EXPORT FOR ONTARIO DEPARTMENT OF AGRICULTURE.



WILDER GRAPES AND KIEFFER PEARS PACKED FOR EXPORT FOR THE ONTARIO
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FRUIT GROWERS' ASSOCIATION OF ONTARIO.

ANNUAL MEETING.

The annual winter meeting was held in the Council Chamber at ten o'clock a.m. at Brantford, Wednesday, December 19, 1900.

W. M. ORR, Esq., President, in opening the meeting, said: Ladies and gentlemen, the time has come to call this meeting to order. I am glad to know that all the officers and directors of our Association are present, and that so many are with us who are interested in this work. After the vicissitudes of another year we are to meet and greet you. We meet in this beautiful city of Brantford for the second time to hold our annual meeting on the invitation of the Board of Trade of this city, and of the Farmers' Institute of the County of Brant. This is the 41st annual meeting of this Society, reckoning from its first formation in 1859, and notwithstanding its venerable age the end of the century finds it in the full strength and vigor of youth. We review its history with a great deal of pleasure and satisfaction, remembering the excellent work it has done for horticulture, its many pleasant associations, and the valuable assistance we have received from it in our work. We have an excellent programme, giving a list of subjects that are full of interest to every fruit grower in Ontario, and we are fortunate in having secured some of the leading scientists and horticulturists in Canada and the United States to attend this meeting and deliver addresses. I am sure that the business to come before you and the subjects to be discussed will receive your best thought and attention. All are invited to take part in the discussion, and ask and answer questions. We hope that this, the last meeting of our Society in this century, will prove both pleasant and profitable to all who attend it.

The SECRETARY read correspondence from the following places asking for the next meeting: Brighton, F. H. Lazier, Executive Committee of East Northumberland; J. H. J. H. Mowat, Town Clerk; Sam. Nesbitt, apple packer. Cobourg, H. J. Snellgrove, Secretary Cobourg Horticultural Society; J. D. Hayden, President; Directors Cobourg Horticultural Society, Mayor and Corporation, J. B. McColl, M.P. Kingston, The Horticultural Society. Orillia, East Simcoe Agricultural Society, the Board of Trade, C. L. Stephens, Secretary Orillia Horticultural Society; Mayor and Corporation. Walkerton, Secretary South Bruce Farmers' Institute.

The SECRETARY also read a letter from William A. Taylor, Secretary of the American Pomological Society of Washington, and stated that five members had been delegated by the directors to attend the next meeting at Buffalo and it was decided that any other members who would like to attend would be duly certificated as representatives of the meeting at Buffalo by handing in their names to the Secretary.

All these letters were referred to the directors for consideration.

COMMITTEES.

The PRESIDENT announced the appointment of the following committees:

Resolutions—W. A. Whitney, E. D. Smith, M.P., and Mr. Dempsey.

Fruits—Prof. Macoun, Messrs. Morris and Race.

New Fruits—Professors Macoun and Hutt and the Secretary.

Mr. MORRIS (Fonthill): Having a large collection myself, I would like to be relieved from that Committee.

The PRESIDENT: I will name Mr. Dempsey in place of Mr. Morris. For the Committee on Nominations the President nominated two and the meeting three. I nominate Mr. Murray Pettit and Mr. T. H. Race

[1]

The following nominations were made and confirmed by the meeting: Mr. Dempsey, Mr. Harold Jones, Mr. Alex. McNeill.

Mr. JOSEPH TWEDDLE (Saltfleet) read the report of the Committee on the Codling Moth, and also the act relating to noxious insects with the amendments suggested by the committee this morning as follows:

REPORT OF COMMITTEE ON CODLING MOTH LEGISLATION.

MR. PRESIDENT AND GENTLEMEN,—Your Committee beg leave to report the following: Committee met and drafted the enclosed recommendations which were later discussed in an interview with the Hon. Mr. Dryden, Minister of Agriculture at Toronto, and arrangements were made with the Provincial Legislature to incorporate such in an act to compel the destruction of said moth in such municipalities as shall enforce the same by By-law of the Municipal Council. Such an act, with regulations by order in Council, was passed, a copy of which here follows: The regulations in council were not passed until May 24th and required until June 9th before a By-law could be legally passed.

AN ACT FOR THE PREVENTION AND DESTRUCTION OF CERTAIN NOXIOUS INSECTS.

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. This Act shall be known as *The Noxious Insects Act*.
2. The following provisions of this Act shall come into force and take effect as to every municipality the council of which shall by by-law declare this Act to be in force therein. The council may at any time repeal such by-law, and thereafter this Act and any regulations made thereunder shall cease to apply or be in force as to such municipality.
3. Under the recommendation of the Minister of Agriculture the Lieutenant-Governor in Council may make such regulations for the prevention and destruction of insects injurious to trees, shrubs and other plants as may be deemed advisable. Such regulations shall come into effect and have the force of law after publication in two successive issues of *The Ontario Gazette*.
4. Every municipal council adopting this Act shall in and by the by-law adopting the same appoint one or more inspectors whose duties it shall be to inspect all orchards and to enforce the provisions of this Act and the regulations made thereunder, and to report upon the same to the Council.
5. In case the occupant or the owner of any lot neglects or refuses to comply with this Act or with any regulations made thereunder, the Inspector may cause the necessary work to be done, and shall within ten days make a report in writing to the Council stating the amount of the cost thereof and the Council may thereupon direct that this amount or such part thereof as may appear to them equitable, shall be entered upon the collector's roll against such owner and shall be collected in the same manner as other taxes.
6. Immediately upon the passing of a by-law by any municipal council for bringing this Act into force, the said council shall cause to be delivered to the occupant or owner of every lot affected, a printed copy of this Act and of the regulations made thereunder, together with a copy of the by-law and the name and address of the Inspector appointed to enforce the Act.
7. Any person interfering with the Inspector, or attempting to hinder or prevent him in the enforcing of this Act, shall upon conviction thereof, before any of Her Majesty's Justices of the Peace, be subject to a fine of not less than one dollar nor more than twenty dollars, and in default of payment of the same to be imprisoned in the common jail for the period of not less than ten days, nor more than twenty days.

REGULATIONS BY ORDER-IN-COUNCIL.

Approved by His Honor the Lieutenant Governor, 24th day of May, A.D. 1900.

Upon the recommendation of the Honorable the Minister of Agriculture, the Committee of Council advise that pursuant to the provisions of "The Noxious Insects Act," (63 Victoria, Cap 47), the following regulations be made for the prevention and destruction of the "Codling Moth."

"1.—It shall be the duty of every occupier of a lot within the municipality, or if the land be unoccupied, it shall be the duty of the owner of such lot, within one week after receiving notice as provided for in the Act, to place bands (as hereinafter described,) upon the orchard trees located upon said lot, as follows: Upon all bearing apple trees and pear trees, and upon all orchard trees of bearing age within forty feet of such bearing trees.

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2.—The bands shall be made of "Burlap" or "Sacking," or similar suitable material, and shall not be less than four inches in width, and of three thicknesses, and shall be securely fastened at a convenient point between the crotch of the tree and the ground.

3.—The occupant or owner shall have these bands removed and inspected, all larvae therein destroyed, and the bands replaced at intervals of not more than two weeks during the months of June, July and August.

A number of fruitgrowers attended special meetings of the Saltfleet Township Council on June 8th and 9th asking that such By-law be passed. The Council declined to act but requested that a series of public meetings, be held throughout the township at the earliest possible date to discuss the advisability of such action, posters were put up throughout the township, and small bills were distributed through the public schools to the residents and ratepayers, and five public meetings were held and resolutions were passed at each, favoring the enforcement of the act. These were presented at the next meeting of the council, July 9th, at which the By-law was passed, and three inspectors appointed to look after enforcement of same. Some time was required to get the necessary printing done and placed in the hands of the ratepayers as required by the Act and its regulations consequently the Act could not be enforced before the 20th of July. Although most of the growers attended to the work earlier there were a few who did not until they were forcibly reminded of their duty by the inspectors on their second visit some two weeks later. About the last week of July and the first week of August, we commenced the work of destroying the larvae, and chrysalids in our own orchards on the 9th of July. Thus it will be seen that the act could not under these circumstances be enforced early enough to catch the whole of the first brood, but would allow part of the moth to escape and lay their eggs for the second brood. Another feature of the case was that this work had to be done just in the haying and harvest season amongst the farmers; and I understand that the inspectors were privately instructed by the council board not to be too severe in enforcing the Act under the circumstances but rather to proceed as far as possible without making its enforcement a hardship. Another troublesome feature of the work was the scarcity of canvas; such was the demand in Hamilton that the regular price was doubled and trebled before the season was over; in fact the supply became exhausted and felt paper had to be resorted to. It is currently reported that in some cases bands were put on and never attended to through the inspectors being lenient and not making their final rounds; and I have no doubt that this is true to a small extent. However, the intention of the present council board if re-elected is to thoroughly enforce the act another year and if possible make it a complete success and no doubt they will have the support of the people generally (with some few objecting). Many who were doubtful of the success of the work at first after seeing the great numbers of larvae, caught, especially the fall and winter brood are now in favor of it. A few who were sworn to defeat the council at the next contest for having passed the By-law are now friendly toward them, and from careful inquiry lately public sentiment seems to be strongly in favor of the continuance of the work.

In reference to the conditions of the season it is considered that it has been a very favorable one for the propagation of the pest, being mostly dry and warm without any long continued cold rains to destroy the moth when on the wing or hinder her in the operation of depositing her eggs and also in hatching of the same, added to this the large brood wintered over from 1899, the crop of that season both of apples and pears being a fair one furnishes a food supply for their propagation. Yet such numbers have been destroyed as to permit of a good season's pack of clean fruit, whereas had they not been destroyed but permitted to continue their propagation under such favorable conditions we could not have expected to harvest but a small percentage of fruit free from their ravages, but with provision for the destruction of this season's winter brood we hope to be at a great advantage over the past season in destroying the pest during the coming year. Your committee herewith exhibit specimens of infested bands and trust that the Act and its regulations with some necessary amendments may soon be adopted throughout the Province by which means it can only be most beneficial. All of which is respectfully submitted.

Signed

JOSEPH TWEDDLE,
Chairman of Committee.

Since writing the within report your committee have met and recommend the following changes in the regulations:—

1st. That clause 1 be amended by adding the following words after the word "Act": "to scrape all rough bark, and all loose bark around wounds, from all the trees mentioned in this clause."

2nd. Also by striking out all after the words "upon all bearing apple and pear trees."

3rd. That the following words be added to clause 3: "also that the bands be removed and all larvæ destroyed between the 15th day of November and the 15th day of April following, each year.

(Signed) JOSEPH TWEDDLE,
Chairman of Com.

Mr. Tweddle moved the adoption of the report, seconded by Mr. E. D. Smith. Mr. Tweddle also exhibited the bands used by him in exterminating the moth.

Mr. G. C. CASTON, Craighurst: What mode do you take of killing them when you find them? Do you pass them through a wringer or dip them in hot water?

Mr. TWEDDLE, Fruitland: We just loosen the band at one end, because if you do not pull it off carefully they will break the cocoon between the bark of the tree and the band. We open the upper part of the band a little in advance of the lower side and break them with a knife or take your thumb to them, which is about the most rapid way.

Mr. MURRAY PETTIT, Winona: The results with me have not been very satisfactory. The Act was not put through in time to get all the machinery in operation early enough, but going through our trees on our first inspection we destroyed from 25 to 75 to the tree, on the later inspection not so many, but our apples were very bad with codling moth. They had been sprayed three times as well; but we cannot expect to destroy them all the first year—it will take a year or two to do it—and it looks to me that killing them in this way is the most certain and practical way of doing it.

E. D. SMITH, Winona: I wish to corroborate what Mr. Pettit has said in regard to our neighborhood. I feel satisfied that the thorough carrying out of this law for only one season will entirely rid the township of this moth. I do not think this season's operations can be taken as a criterion of what it will do, because there were orchards that were never inspected, or if they were the moths were never killed, and if there are a few of those left in a township they nullify nearly all that is done. But there is this fact, that we have slaughtered millions of them. I have slaughtered an average of 100 a tree, and when it is calculated that each of these is capable of depositing fifty eggs, it can be seen what an immense number of apples they are capable of destroying and what an enormous amount of good has been done by our work thus far.

A. M. SMITH, St. Catharines: If neighboring townships do not do this, what then?

F. D. SMITH: There is no doubt they migrate very rapidly, but if they can be subdued in one township it will not be long before the whole Province will take hold of it.

Mr. TWEDDLE: I handled about ten orchards this year, spraying and picking fruit, and we found the work of the moth varies considerably in different orchards. Along under the mountain where it is warmer than towards the lake shore, they did a great deal of destructive work, but as you got to the lake shore there was very little loss in the crop. There were apples destroyed, but only what was needed for thinning out. There was one orchard especially along the brow of the mountain, which lies to the south, and a year ago it had no fruit to amount to anything, having been neglected, but this year it had a heavy crop, there being no moths. In watching this insect I made these observations; that even on the south side, where it is warmer than on the north side, there is more fruit infested with the larvæ than on the north side; and there is more on the outside fringe than on the underside; and I believe that the moth loves heat, and goes to all the warmer spots. That orchard lay to the south and was nicely protected with a row of maple trees on the north side and an orchard on the east side of it, and it got the full benefit of the sun, and I think the moths gathered in there at that season of the year and destroyed the crop.

ALEX. MCNEILL, Windsor: Would the prevailing winds from the orchards on the mountain have anything to do in carrying the moths from the infested orchards there.

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Mr. TWEDDLE: I do not know. We had another orchard situated just on the same level, which lay to the south, but it was quite free.

Mr. CASTON: Is this canvas you have brought here a fair specimen of how you found the moths?

Mr. TWEDDLE: We find a great many in our orchards as bad as these, some not so bad. One of these bands was taken off a tree that stood near a pile of apples.

Mr. CASTON: I believe this practical demonstration of what is really the best method of fighting the Codling Moth is of great value to the country. Of course in the northern sections the moth is not so bad as in southern Ontario. The Committee will have to get Municipal Councils where orcharding is the main business to take hold and enforce that Act. It will almost be impossible to do it in townships where fruit growing occupies a secondary place. We would be surprised if we had the damage done by this pest to our apples in past days figured up in dollars and cents. A great amount of fruit has had to go into the cull heap on account of these moths. I believe we would run two very important industries together, that is bacon and apples—that is, if the hogs ran in the orchards and picked up any fallen apples, as I believe that in ninety-nine cases out of a hundred the moth is in the apple when it drops. That, in addition to the canvas bands, would almost exterminate it.

T. H. RACE: Do you find that this moth makes its way up any shade tree?

Mr. TWEDDLE: We find it does not.

Mr. McMICHAEL (Waterford): I have had experience in regard to bandages around fruit trees. After pretty heavy rains in the spring we go through the orchard and scrape off all the rough bark down the trunks and we take an old carpet and tack one end there so that it will be permanent, and we have a claw hammer to pull that out and destroy the larvae and tack it back again. Then we leave it until fall and destroy all the later brood. My experience has been that these moths do not travel from one orchard to the other very extensively. I know of an orchard just to the east of mine, when we take ours off pretty clean we do not have them to come back very much in the other. Of course they do travel on the wing from one orchard to another to some extent.

Mr. McNEILL: Mr. Ellwood of St. Thomas, an apple buyer, tells me that he hunts the country for the hog orchards, and usually finds that where the hogs are allowed to run he can get a good quality of apple comparatively free from Codling Moth. That corroborates what Mr. Caston said.

Mr. TWEDDLE: I had two orchards side by side last year. In one the pigs ran and the other they did not. The first was twice as bad as the second. There may be other causes for it. I think pigs running in an orchard a good thing. Will Mr. McMichael tell us how often he changes his bands?

Mr. McMICHAEL: Every twelve or thirteen days during the early part of the season, and the last crop we leave until the apples are all taken out of the orchard.

Mr. TWEDDLE: I believe the President put three bands on a tree a year or two ago, and another of our neighbors did the same thing this year and found just as many larvae in the upper band as in the lower, and as many in the upper and lower as in the middle.

Mr. McMICHAEL: It is generally conceded in our experiment stations that one-half of the larvae leave the apple before it drops, consequently the pigs would not get those, but having the stick in our bands we get a large percentage of the larvae.

Mr. TWEDDLE: The larva goes down on a web in the night and curls up, so the stick would likely not get it.

Mr. HUNTER (Scotland): I have found them going up as well as coming down. I found them, when they had not matured thoroughly in the apple, go up the trunk again and go into another apple. Perhaps you think that rather strange, that they should go into the second apple, but the larva goes into the first apple at the calyx end through a very small opening, but the second time it goes in through the side.

Mr. McNEILL: Are you perfectly certain about them entering the apple?

Mr. HUNTER: I saw them going up. It was mostly at night. I saw them crawl up the limb. They leave a web as they go. They enter the side of the apple. They get a leaf near the apple, they cut the leaf and make their way into the side of the apple and destroy the matured apple—one of the very best generally.

Dr. SAUNDERS (Director Experimental Farms, Ottawa): I should want to see it myself to be quite sure of it. It is well known to be the habit of the second brood of

moths to lay their eggs on the sides of the apples. I would not be prepared to dispute the statement at all, because there is so much we do not know about all these things we are always open to receive information from everybody; but it is one of those conclusions that I should think would need a good deal of proof, because it is so contrary to the experience of all of us who have watched these insects from the beginning of their lives to the end, and I have never before heard of an instance of a larvæ leaving the fruit that it occupied until it was full-grown. It is possible, however.

Mr. HUNTER: As soon as the seeds are fairly cut or destroyed the fruit ceases to develop, and shrivels up, and that sometimes takes place quite a bit before the larvæ is full grown, so it must have something else to feed upon before it gets full growth. That is why I watched them.

Dr. SAUNDERS: We find some fruits that are seedless that complete their growth and get full size, such as seedless pears and oranges, so that the presence of the seed is not an actual necessity to the growth of the fruit surrounding it, though we commonly think the presence of the seed importance to the growth of the apple. I know that the growth of the larva at that season of the year is very rapid, and an egg laid on the side of an apple would produce a larva that will enter right to the core and destroy the seeds in a very short time, so that the finding of the larva in the apple later in the season, and seeing evidence of its having entered from the side, is not to my mind proof that the larva was partly grown when it entered. In most cases I think it would be found that the larvæ were from the eggs of the second brood of moths.

The PRESIDENT: Were these larvæ apparently full grown?

Mr. HUNTER: Nearly so. I would remark that a larva just hatched from an egg does not make a large hole, but these that I speak of are large. Another thing is that the leaf is glued over, and I doubt very much whether any of them enter from the side at first at all. The way I have seen them generally enter is in the calyx.

The SECRETARY: It would be well if those who have experience would give us some idea of the cost of this work before we vote that this be adopted in different localities.

Mr. ARMOUR: I see Mr. Tweddle reported that felt paper could be used in place of burlap. This would be cheaper than burlap.

The SECRETARY: Perhaps it would not be so good.

Mr. ARMOUR: I think just as good.

The PRESIDENT: It is not so durable.

Mr. ARMOUR: But you have to change every two or three weeks, anyway.

The PRESIDENT: Burlap will last for years.

The SECRETARY: I understand the gentlemen who have been trapping this insect with bands have had to kill each moth individually with a knife. I would like to ask if there is not a quicker way of doing it?

Mr. OASTON: We have heard two ways suggested—one by dipping the bandages into hot water, and the other by running them through a wringer.

Mr. TWEDDLE: It won't work at all. So many larvæ are between the trees and the bands that they drop out; then you have to hunt them out. I can get felt paper at just the same cost as the burlap, two and a half or three cents a pound; that would be about a cent a tree, or forty-five cents per acre for the burlap. It would cost about a dollar an acre for the work of the whole season. A man will go over an acre in an hour if he only gets 8 or 10 or 12 larvæ to a tree; but if he has fifty or a hundred it will take him two hours.

Mr. MCKINNON (Grimsby): I found it took about half a day to the acre. I had sometimes as many as sixty or seventy under one bandage, and in a couple of weeks more there would be as many again.

Mr. TWEDDLE: It is not a great cost at any rate. It would make the cheapest method of destroying them.

Mr. MCKINNON: It cost me three dollars for two acres this year, and I counted nothing on the burlap because I had fertilizer bags that I cut up.

Mr. TWEDDLE: It would not exceed \$2 an acre unless the trees were very large and the larvæ numerous. After you get the burlap it will last three or four years.

A. M. SMITH: I received a circular the other day from an enterprising Yankee who has got out a band made of fine wire that he claims is going to do the work and last several years at a cost of two or three cents apiece,

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Mr. McMICHAEL: My experience is that the moths are very loth to come under bands that let the light through. A wire screen would have that tendency.

Mr. TWEDDLE: That has been my experience. White cotton is no use; they won't go under it. They seek a loose bark first, it is better protection from the light. With regard to that scraping, I don't find many larvæ around the loose bark where there were bands on the trees, but we did find numbers of them where a piece of thick, loose bark, dead or even alive, was hanging around the edge; it would seem to be greater protection and they would go in there even though there was a band on the tree we would find great numbers of them. That is the reason we suggested that the bark be scraped off around the band.

E. D. SMITH: My experience of the last two years is that the cost of destroying them will not exceed fifty cents an acre.

The PRESIDENT: Does that include bandaging for the first time?

E. D. SMITH: No, killing them off.

The motion to adopt the report was carried.

REPORT OF THE COMMITTEE ON TRANSPORTATION.

Your Committee on Transportation beg leave to report as follows:—

That owing to the advance in the price of all kinds of material entering into the construction and operation of the railways of this country; on January last, the railway companies withdrew and abolished all special rates and concessions. Amongst these was the arrangement entered into by your committee with the Canadian Joint Freight Association, whereby grapes in carloads had been carried during the season of 1899 at a reduced rate.

Your committee therefore met together early in the year and canvassed the situation as thoroughly as they were able, with the time and information at their disposal, and decided to present the following memo. of requests, through the Joint Freight Association, to the various railway companies, for their consideration, that is to say:—

1. Restore last season's special, making it apply to mixed fruits in carlots, to all destinations in Canada.
2. Make mixed fruits in 5 ton lots to one consignee, third class.
3. Make mixed fruits in ton lots, to one consignee, second class.
4. Place apples in barrels in carlots for shipment in Canada, eighth class.
5. Grapes in barrels, or large baskets, for wine purposes only, fifth class.
6. Encourage the export of fruit to the British market.
7. Devise means whereby a better distribution of fruits by freight in Canada may be accomplished.
8. Where refrigerator cars are iced en route, actual cost only to be charged.
9. Permit barrel apples in mixed cars to carry the apple car-load rate.

To which after very mature deliberation, the following reply was received in June last, viz.

1. From points west of Toronto to Toronto and east thereof, also to points on the main line of the C.P.R. east of and including Pembroke, on the basis of fourth class for grapes C.L. Mixed cars of grapes and other fruits, including apples in baskets, crates or boxes, to be on the basis of fourth class for the grapes, third class for the other fruits and fifth class for the apples in barrels. Minimum weight for mixed cars containing apples in barrels, 24,000 lbs.

2, 8 and 4 declined.

5. Straight carloads of grapes in bbls. from and to above named territory to be fifth class O.L., minimum 24,000 lbs.

6 The Canadian lines to give all reasonable encouragement to export traffic.

7. The railroads to give all convenient despatch to shipments of fruit by usual way freight trains.

8. Cost of ice to be made as reasonable as circumstances will permit.

9. Provided for in No. 1.

The foregoing practically means that the concession granted in 1899 be restored and the additional arrangement granted whereby mixed cars of basket and barrel fruit would be carried at their respective carload rates with a minimum of 24,000 lbs.

The committee felt that the entire list of changes as asked for were not unreasonable, and would if granted result in furthering the distribution of the large output of fruit that was at that time in prospect. The experience of the season which has just closed has shown that the efforts of the committee have not been without advantage to such fruitgrowers and shippers as have been in a position to avail themselves of the privileges secured.

It must be borne in mind that the R. R. companies are exceedingly averse to make any changes in their rates for quantities less than carloads, and the most feasible way for shippers to help themselves is for a number to unite together and where possible to ship in carlots, thus getting better rates and usually much greater despatch.

There is still a lamentable lack of proper cars to handle the fruit crop to best advantage; during the past season there has been considerable loss to shippers through improper cars and delays in transit by freight, and through bad handling and overloading cars by express.

As the fruit output increases it will be the duty of this Association to bring what pressure to bear it may be able, to impress on the transportation companies the advantages of catering to this trade.

With reference to ocean transportation, your committee have no data as to what improvement, if any, has been made in that respect, although we are glad to note that great success has characterized the shipment of tender fruits to England during the past few months. You will however no doubt be favoured with full particulars of these shipments before this meeting is over.

We cannot close this report without referring to the courteous and attentive manner with which your committee was received by the railway officials and their manifest desire to be informed of the needs of the fruit trade.

All of which is respectfully submitted.

WM. H. BUNTING,
Chairman of Committee.

Mr. BUNTING, after reading the report, said: Personally I feel very much pleased with the result of the work of the Committee. We have not accomplished all that we would like. We have not had our requests granted as fully as we would like to have had, but the fruit industry has been brought to the attention of the chief officials of the various roads and it is encouraging to observe the attention that was given to the matter, and to know the desire of the railway people to help us if we can show it to be to their advantage. We must be able to bring to them a business that is worth their while taking hold of. We must be able to show them from time to time that not only the wants of the trade are urgent, but that the advantages to the roads would be great, and that is the best argument that we can bring. The only way that we can get that, it seems to me, is by co-operation in the various sections, and if the Committee appointed to carry on this work could get the information showing the wants of the various sections and the disabilities under which they are laboring, so that the matter can be brought intelligently and properly before the railway people, I believe that there is a possibility of vast improvement in this respect. I have very great pleasure in moving the reception of this report.

Mr. McNEILL (Windsor): I would second that motion, and at the same time say a word or two in reference to the importance of this work. Here is a place, it seems to me, that this Association is called upon to do something, and if we wish to keep up the traditions of our Association here is a line along which we can work, and work successfully. While we ought to be pleased with the success we have attained, it is simply on the ground that we ought to be thankful for small favors when we can get no more. Certainly the concessions are greater than I thought the committee could get from the railroads, but they are nothing like what we as business people deserve from the hands of the railway companies. This transportation question is one of the greatest obstacles to our trade, and very little progress will be made until we have better transportation than we have yet. The concessions they have made are not at all yet what they should be. We are discriminated against as fruit growers particularly. We are hampered in our business. We could increase largely our business if our freight rates were more favorable. This Association, I think, can look back over a long career of usefulness in the matter of educating the public along the line of growing fruits. That, I think, is conceded on all

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sides. It has done a noble work, and those that have gone before us deserve every credit ; but the production of fruit in this Province has reached such a stage that we more than supply our own markets, and there is a glut at almost every point of production, while there are other parts suffering for it. Mr. Whyte, the gentleman who has charge of the pork packing establishment in Seaforth and Stratford, told me in the presence of Mr. Race that for a basket of grapes which we were glad to get 11 cents for at the most—10 cents usually—they would in the same season have paid 50 cents for in Brandon. Another gentleman from Calgary told us that they paid \$1 per basket for exactly the same basket that we were glad to get 11 cents for. There was some of that for the middle man, but the larger part of that was for the freight. Such instances could be multiplied a thousandfold to show that, while there is a glut at the point of production, there is a scarcity that reduces consumption on account of freight rates. We are discriminated against as fruit growers. Take grapes alone. While a carload of wheat coming down from Manitoba can be brought here for between \$40 and \$50, these very cars go back during the month of September—just when we are sending our fruit up to Manitoba—these cars go back empty in train loads. And these are the very cars we like to get on account of their having a window at each end and having a draft through that is equal to this celebrated cold draft that is so desirable on board ship. With those grain cars we could get the very conditions desired, and yet if we ask to have one of those grain cars filled with grapes—of not as much value as the carrying of wheat that came down in the car—they ask us not \$40 or \$50, but nearly \$100 to send the car back. There is no sense nor reason in that. We use the car for a shorter period of time—load it and unload it quicker. We can go around the whole range of fruit and find the same difficulty. Shipments of stock would illustrate the discrimination. We are also discriminated against as Canadians. An American can ship fruit into this country and get a cheaper rate than we can. My friend, Mr. Boulter, can go down to the county of Essex and barter there for a carload of peaches. All we can say to Mr. Boulter is, "We have the peaches here ; you want to can them." He offers a certain price and we refuse that, and he can go to Grand Rapids, Michigan. There is a duty of 50 cents a bushel on the peaches coming into Canada, but he says, "I will get a freight rate from Grand Rapids to Picton that is cheaper than your rate from Leamington to Picton." That is only one matter of discrimination as Canadians. They will haul American fruit cheaper than Canadian fruit. That can be multiplied in a thousand instances. Then again, the freight rate on the American side is positively cheaper—not relatively—than on our side. For instance, I can go to Detroit and get a rate of 19 cents per hundred pounds from Detroit to Chicago, whereas if I want to go to the nearest market we have to the east of us—that is London, about half the distance—they charge me 32 cents per 100 pounds, proving clearly that this whole matter of freight wants to be reconsidered. I am very much surprised that there was not one point taken up here. We are to be congratulated in having one on the committee who takes so much interest in it and has worked so hard and faithfully as Mr. Bunting, but he will remember how the railway company talked to us. He will remember no one could be more polite. Why not? They were getting everything they wanted ; what temptation was there to be anything but polite? It appears to me I would be good natured myself if I were getting a few hundred dollars a day out of the party to whom I was talking ; it is a first-rate lubricator for geniality. We had nothing to complain of on that score at all, but this I noticed : that in all their questions, and in all the arguments we could use to them, the only question they cared about was : "How much are you getting out of this thing?" "Why, you are looking well and hearty and hale, you do not appear to be suffering over this business"—they would say to us—"what do you want a cheaper rate for?" "We want to make a little more money." "Oh, you get three meals a day, and dress fairly well." Everything they inquired into was how much we were making out of our freight ; and it appeared to me that as long as they felt that we were getting anything out of it at all, then just so long they were not able to make concessions. Take in this matter of grapes alone ; we got that concession largely because we put before them these facts : that if they did not make a concession there, the grape industry would go down, in certain parts of the country anyway—and it did partly on account of frost—but it will never be revived again on account of the freight rates. They did not ask for one moment as to the actual cost of carrying the stuff. The facts that I have cited here discriminating be-

tween fruit and other productions show that they do not enquire into the actual cost of carrying these things, but they simply enquire into what they can get out of the business—as they call it, “How much the traffic will bear.” To put it in another way, they simply stand in the position of people who can squeeze the public, and they squeeze just to the extent that the fruit growers can live in this case. All their arguments and questions are along the line of finding out how much they can take from the average farmer and have him live, and they will fix their freight rates just at that. They argue that the farmer and fruit grower who is above the average will make a good thing, and they try to devise methods by which they can get at his surplus, leaving the fellow under the average to drag out an existence and work sixteen or eighteen hours out of twenty-four so as to make up for his want the other way. The railway companies, as they are organized at present, are in a position to hold the same relation towards commerce in this land that the old barons four or five hundred years ago held upon the banks of the Rhine, when they built their castles and by force of men and muscle could exact from all who passed their doors a certain tribute. Today they use brain, not muscle, and they say because they use brain they are entitled to all they can get out of it. Now, my opinion is we must get together and match them either in brain or muscle. I do not say that it is any more honorable to steal by strength of muscle than by force of brain. That is an ethical question I cannot discuss here. A careful investigation has convinced me that the railways are in a position to take just what they will out of the traffic; and when we go to them we have nothing to offer them except, as Mr. Bunting very honestly put it, that we can do something for their interest. It is only when we can show that we are working in their interest that we can get any concession at all. I say that it is not the proper position to be put in. We are the people who are making the wealth—they are simply conveying it; and while I am perfectly willing that they should get a fair recompense for the work that they do, I say it is a shame and a scandal on the fruit growers here that they should stand without protest this condition of affairs, by which the railways can take exactly what they please and we have no remedy in the matter. We ought at some stage of our proceedings to do what we can to remedy this state of affairs. The only way I see is for us to join with the other bodies of intelligent farmers who are gathering throughout the country and asking the Government to take this matter into consideration and at least appoint a Commission to investigate the whole affair and endeavor to get at some solution of this transportation business. It is the only remedy that I see. It is a step in the right direction. It will not be solved within the next one, two, five or ten years; indeed if it is solved within the next fifty years we may be thankful, but it has to have a beginning. I will second this motion and pass the report, at the same time congratulate the Committee on the success they have had, and move this resolution at a later stage of the meeting.

Mr. McKINNON: Mr. A. M. Smith and myself move that the report of the Committee be amended by adding this: “That in the opinion of this Association the time has arrived when a Railway Commission appointed by the Dominion Government should be given full power to regulate freight and passenger rates upon an equitable basis.”

Mr. A. H. PETTIT: I want to make one remark in regard to the report. While we are expressing ourselves as pleased with the change in the classification rate as being in our favor, if you will notice, the rate before was on 20,000 lbs. Now, with a lower rate and classification we have it put at 24,000. Now, 24,000 is too much for any car to carry of perishable fruits. The grower views it from this standpoint: we are getting a lower rate, but a 24,000 lb. car will not hold it; it is impossible to put 24,000 lbs. of grapes in our cars to-day and ship them with any kind of success. The grower will come out with damaged fruit. So that really the reduction is not so great to the grower at least, and the railway company will get the same amount they got before, because they will make you put 24,000 lbs. in instead of 20,000. I think that should be changed. I say 20,000 lbs. is enough for any car to carry.

Mr. BUNTING: I think a little explanation will be necessary. The minimum of 24,000 lbs. in the report refers to carloads of freight only when barrel packages are placed in cars, barrel apples or grapes. The minimum for basket freight still remains at 20,000 lbs. Of course that is regarded this year as somewhat of a hardship, where it was desired to put in a few packages, but after that grew up it resulted in raising

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the minimum from 20,000 to 24,000. The report is necessarily somewhat technical in reference to classification, but I might say that the reductions that were asked by the Committee were equivalent to about 20 per cent. of a reduction upon the ordinary rates that had obtained heretofore. With reference to grapes that was practically the only concession that was given—a reduction of 20 per cent. for grapes only in basket lots.

Mr. W. BOULTER (Picton): Did you get a yearly rate from the Traffic Association?

Mr. BUNTING: This rate obtains until it is cancelled, I presume.

Mr. BOULTER: Are you positive they will not raise the rates up on you when the winter comes on?

Mr. BUNTING: Yes, rates go up.

Mr. BOULTER: The next time you go before them, ask for a yearly rate.

Mr. CASTON: I think we might sum up the situation in this way: We have practically only two railways in this country; they are competing for the through traffic to the seaboard, and discriminate in favour of the Americans and against the Canadian, and about the only solution that is offered is either Government ownership or a Railway Commission. I believe this resolution is along the right lines, and although we may get some minor concessions we will never have radical change until we have either Government ownership or a Railway Commission with power to settle these matters.

Mr. J. M. SHUTTLEWORTH: I have some bills of lading in my possession through St. Louis to Liverpool via Montreal, and I also have some of the same date from different points in Huron and Bruce, and the freight from St. Louis to Liverpool via Montreal over the Grand Trunk was actually a little less than the freight from points in Huron and Bruce to Liverpool. That is hauling over the same road.

Mr. E. D. SMITH: I can point out a similar glaring case of apparent injustice. The freight rate from here to St. John's, Newfoundland, by way of St. John, New Brunswick, is less than from here to St. John, New Brunswick. We have known of all these cases of injustice for many long years, and have frequently gone before the Traffic Association. As long as I can remember the injustice of the railways has been agitated, and we have got nothing. I was a member of this Committee that was before the Traffic Association last year, and I can assure you that Mr. McNeill's description of the way that it was received the year before has just about hit the nail on the head. They are just as courteous as they can be, and they get you out after your interview in as short a space of time as they can without offending you in any way, and they throw a little sop or two—as you will see we have got something—which does not amount to much. I think, as Mr. McKinnon's resolution states, the only remedy we can ever expect will be Government supervision of the rates of railways. The railways are going to fight, it is their business to fight, to get all out of the traffic they possibly can. They just figure the thing up how they can get the most money out of it, and if they think this freight is going to be carried anyhow, they charge as high as they can for it. There are only two railways in the country, and they have practically agreed on rates, and so there is no real competition. I feel like supporting the resolution.

Mr. McNEILL: They have not only agreed on rates, but they have the thing fixed against their own selfish greed so that they cannot cheat each other. They have actually got the mechanism down so fine that one cannot cheat the other, and they just go into it on that score. They have got this Traffic Association business around them so nicely fixed that, although in years gone by they did attempt to cheat each other, now there is no competition or chance for it. The Secretary of the Manufacturers' Association recently received a letter from the Department of Railways and Canals stating that the Association would be consulted in future before new rates schedule issued by the Railway Companies were approved. You are all aware that the Railway Committee of the House has control of these rates. It does not amount to a hill of beans. They can do as much as a Commission will do, but we don't expect them, and they never will; nevertheless they have nominal control of these rates. They nominally assent to all the rates. Now, there is a concession to the manufacturers. If you will just take the statistics, as I took the trouble to do a few years ago, you will find that our business far exceeds theirs in the amount of money invested, in the number of people engaged in it, the value of the annual product, and in everything that should constitute a business; nevertheless they are consulted and we are not,

Mr. McKinnon's motion was put and carried unanimously.

The SECRETARY: I would move that this Committee on Transportation be continued during the coming year, and exert themselves still farther in our interest. The names of the Committee are: W. H. Bunting, St. Catharines; A. H. Pettit, Grimsby; E. D. Smith, Winona; T. H. B. Carpenter, Winona; A. McNeill, Windsor.

Hon. JOHN DRYDEN: I have had some experience in dealing with these railway men in connection with some other matters, and I quite agree with what Mr. Boulter has said. There is only one way you can approach the railway authorities, and that is, if you can show them that by a change in the rates they can increase the product of the country, or in any way take such a course as will tend to advance the interests of the railway, they will listen to you; but if you go to them and say in effect, "If you change this rate I can make so many more hundred dollars a year than I do now," they will just smile and look pleasant and go on with their business and pay no attention to it, for they are sharp enough to see your argument. A few weeks ago, in Montreal, we got considerable additional concessions in live stock in this country, but it was along the same line. I used my best endeavour to put my arguments so as to show them that we were going to increase the trade of the country, increase the production of the country, which, of course, meant adding revenue to the railway.

The SECRETARY read letter from Mr. Thos. Beall of Lindsay, regretting inability to attend, and suggested that it be referred to the committee on resolutions; he also read letter from W. E. Wellington of Toronto, regretting inability to attend. He then said: We have received invitations for next year's meeting from several places in addition to those named this morning. We have one from the Horticultural Society of Belleville, and one from the city clerk of Belleville, also a personal letter from Mr. Reid. I suppose you will refer these letters to the Directors for consideration with the others to-night. I have a letter from Mr. Hamilton, Grenville, P.Q., regretting his inability to attend, but he is mailing documents to Dr. Saunders, one regarding the Canadian exhibit of fruit at the Paris Exhibition, 1900, the other on Horticulture in France.

REPORT OF COMMITTEE ON NEW FRUITS.

PRESENTED BY PROF. H. L. HUTT (ONTARIO AGRICULTURAL COLLEGE) GUELPH.

The duties of this committee are to be on the lookout for anything new in the line of varieties of fruits. Any new and valuable fruit which may be brought to our attention we are glad to take careful note of and report to this association. I think it a somewhat remarkable fact that the greater number of our best varieties of fruits are of chance origin, such as the McIntosh Red and others. Of course we have had and still have men who have done valuable work in the raising of fruit by cross fertilization. The late Charles Arnold, of Paris, has given us the Ontario, one of our valuable winter apples, and our friend, Dr. Saunders, has done much for us in that line, but still there is much more that might be done in the way of improvement in our cultivated fruits. We have not reached perfection by any means, and there is room for valuable work along this line. The number of fruits that have come before us this year has been rather small—smaller than usual—and a great number of them are hardly worth mentioning. Some of them are promising. We have given more extended descriptions of the more valuable of them.

The object of this committee on new and seeding fruits is to be on the lookout for any new seeding which may give promise of value and report upon the same to this association.

It is a somewhat remarkable fact that by far the greater part of the fruits now cultivated are of accidental or chance origin. Nature has produced them and man has discovered and adopted them. For every one, however, which has been considered worthy of adoption and propagation, thousands have been produced which were of little value and received no attention.

There are a few men in our own country and in the States who are doing careful work in the raising of new fruits by cross-fertilization and following out the principles of plant breeding. The names of such men will no doubt remain in the annals of horticultural

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ture; but there is still room for valuable work along this line. We have not yet reached perfection, and there will probably always be room for improvement in the different classes of cultivated fruits.

The number of samples which have come before the notice of your committee this year is smaller than usual, but among them are a few which give promise of value. In the following notes, brief mention is made of the varieties which have been received, and those of promise are more fully described:

SEEDLING APPLES.

No. 1. The Russell apple.—The origin of this variety, which has been fruited at the Central Experimental Farm, Ottawa, during the past five years, has been furnished by Mr. J. P. Cockburn, Gravenhurst, who gave it its name. He says it is a seedling supposed to have originated with a Mr. McRae, of Russell County, from seed brought from the Niagara district. Mr. Macoun gives the following description of it, as it had been fruited at Ottawa:—

“Medium to above medium in size; skin pale yellow, almost completely covered with deep red; very handsome; a few gray dots but these are not prominent; stem long and slender; cavity shallow but open; calyx closed; basin shallow and slightly wrinkled; flesh white, tender, melting, juicy, subacid with a suggestion of Fameuse flavour but slightly astringent; core large; skin thin and tender; quality good. Ripens unevenly from August to middle of September. This is the best table apple of its season which has been fruited at Ottawa. It may not prove valuable commercially on account of its uneven ripening, but it will be very useful for home use.

No. 2. A seedling apple from J. Ryerson, Orillia, Ont.—On this variety Mr. Woolverton has made the following comment:—(*Canadian Horticulturist*).

“This is certainly a most attractive looking apple, almost equal to the Gravenstein in appearance, and of a season to continue its use from the time when this variety is over in October throughout November and December. In form it is oblate with deep russeted cavity and large deep basin. The skin is straw colored background, almost covered with stripes and splashes of bright red. The flesh is white, fine, juicy, of an agreeable aromatic flavour. This is a promising apple.”

No. 3. Seedling from G. H. Caughell, Aylmer, Ont. Medium sized, yellow, sweet summer apple.

No. 4. Seedling from Miss Orgill, Glen Orchard, Simcoe county, Ont. A small red, crab like apple of rather poor quality.

No. 5. Seedling from W. H. Lambert, Vanbrugh, Ont. Medium-sized streaked autumn apple, of fair quality.

No. 6. Seedling from Alex. Skinner, Lindsay, Ont. Large, red, above medium in quality, ripening in autumn.

No. 7. Seedling from A. Clifford, Richard's Landing, St. Joseph Island, Ont. A large handsome apple, somewhat resembling Ben Davis, of only fair quality, but may be useful, on account of its hardness, in the northern sections.

No. 8. Seedling from J. P. Cockburn, Gravenhurst, Ont. Medium-sized apple, splashed and washed with bright red on sunny side, quality above medium.

No. 9. Seedling from Wm. Spredborough, Bracebridge, Ont. A small, red winter apple called Willen, of good quality, may prove of value in the northern sections.

SEEDLING PEAR.

A seedling from Robert Marshall, Snelgrove, Ont. A medium-sized handsome pear with bright yellow skin and red cheek. A chance seedling, supposed to be a cross between Anjou and Louise Bonne. The flesh, however, is as tough as a turnip, although the flavor is superior to that of Keiffer. This pear could no doubt be shipped successfully to the ends of the earth, and would in all probability keep long after reaching its destination. Some have suggested that it might be profitable for shipment to the Old Country market because of its handsome appearance and long keeping qualities, but we do not think it advisable to propagate a variety with which no shipper would dare allow his name to appear.

SEEDLING PEACHES.

No. 1. A seedling from W. E. Wellington, Toronto, Ont., grown in the City of Toronto. Upon this variety, Mr. Woolverton makes the following comment:—

"This seedling measures $3\frac{1}{2}$ in. in diameter and weighs one-half a pound. The flesh is yellow, juicy, and excellent, and quite free from the pit. We know of no peach of this season to compare with it. We have finished Elberta, Late Crawford, Steven's Rare-ripe, and Longhurst, and are now gathering Smock and Winter, but these latter are small compared with this fine sample."

No. 2. A seedling from Thos. H. Lewis, Jarvis, Ont. A large handsome peach, very much resembling early Crawford, but a little more highly colored.

SEEDLING PLUMS.

No. 1. A Japan seedling of Luther Burbank's, grown at W. W. Hilborn's, Leamington, Ont. This is another of Burbank's promising Japan plums. It resembles the Burbank in size and appearance, but is two or three weeks later in ripening. The tree is thrifty, vigorous, and very productive.

No. 2. An American plum, a seedling of Wolf, raised at the Central Experimental Farm, Ottawa, Ont. In this connection, Mr. Macoun has given us the following notes:—

"A large number of seedling American plums have been grown at the Central Experimental Farm, but none have proved superior to some of the named varieties. This year, however, one fruited which will probably prove a valuable acquisition. The fruit is very large, roundish, firm, color deep but lively red, very handsome. Bloom moderate. Suture merely a distinct line. Flesh yellow, juicy, sweet, rich. Stone large with flesh clinging to it. Skin thick and tough; quality very good. Ripens last of September. Tree vigorous. Where late native plums are desired, this should prove valuable."

SEEDLING GOOSEBERRIES.

Three very promising seedling gooseberries were received from Mr. C. L. Stephens, Orillia, Ont., who has been giving considerable attention to the growing of seedling varieties.

No. 1. A seedling of Industry; fruit large like Industry; and so far has proved free from mildew. Promising.

No. 2. A large greenish white berry, very much resembling Whitesmith. Promising.

No. 3. Medium sized green berry resembling Downing.

No. 6. A large handsome berry resembling Whitesmith in size and shape, but of a bright yellow color. Promising.

H. L. HUTT,
L. WOOLVERTON, } Committee.
W. T. MACOUN, }

Professor Hutt moved the adoption of the report, which was seconded and carried.

Dr. SAUNDERS: I would like to make one remark in this connection. Prof. Hutt has told us about the Keiffer pear that the flesh is as tough as a turnip, and it might do for shipping. I was in the Covent Garden Market when I was in England, and one dealer said, "We used to get good prices for these Keiffers, but we can hardly sell them now." It is very evident they are being gradually educated to appreciate good pears, and I do not think it would be well for us to encourage the exportation of anything that we are not prepared to eat ourselves. (Hear, hear.)

Mr. MORRIS (Fonthill): I would suggest that the Committee on New Fruits carry their work a little further. It is of very little benefit to report on a seedling that they find in Canada, because in five years, perhaps, they would not find one of sufficient merit to be propagated. What I would suggest is that they examine all new fruits offered by Americans, by all nursery men, wherever they find a catalogue offering us something new as a specialty, that they write to them and get a sample of the fruit and report on that, and then we will have a report so that by the time a nurseryman gets to selling those

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trees in this country, the people will be in possession of the facts as to the value of those fruits. I think this would add very much to the value of their reports.

Prof. HUTT: We would be only too pleased to extend our work in that line if we could get hold of the new varieties sent out by American nurserymen, which is a difficulty. Of course we will have them after a time at our experiment stations. Mr. Burbank is willing to send along anything he has, and we would be only too pleased if the Americans would send over their new fruits and let us try them. I think sometimes our work is not known enough. If the people knew that we were on the lookout for things of that kind, and that these things always come before our Association and are taken care of, they would be more inclined to send in anything on that line. Can you suggest, Mr. Morris, any way we could get hold of those American varieties?

Mr. MORRIS: I suggest you get hold of the American lists and send each one a card asking them for their catalogues, and see what they have to offer.

Mr. WHITNEY (Iroquois): Some fruits have been highly recommended by the Committee. Is it the usual course to have these fruits tested more fully by our Experimental Stations? I think we ought not to drop it with the mere report, but carry it on to the Stations and have them further tested.

L. B. RICE (Port Huron, Mich.): As far as our nurserymen are concerned, any who are propagating a good fruit would undoubtedly send samples to your Committee upon writing to them, but if it is a fruit that they are ashamed of they won't send it to you and you might just as well report against it on the start. We are fairly honest (laughter) and we are getting more so, as are you (laughter), and when we find anything that is not good for you we will not send it to you, because we are afraid you will get posted up too well.

Mr. SHERRINGTON (Walkerton): We ought to trace them up for a few years to see if they hold out.

The PRESIDENT: That would be very much enlarging the work of the Committee, and I think when the propagators of these fruits see the report of the Committee, that will give them some idea whether it is worth while going on trying to propagate or not. It appears to be all that we can do at present.

E. D. SMITH: Something might be done in the line suggested by Mr. Morris. When a new grape, like Campbell's Early, was first introduced, samples of that fruit could be sent to the Committee and they could report as to quality, size, bunch and berry and so on, and a good deal of information could be got in that way.

The PRESIDENT: I think Mr. Morris' suggestion will be accepted by the Committee, and anything that can be done in that way will be done.

Prof. HUTT: If any new varieties are promised we will try to get a scion of it at Ottawa and Guelph, and if anything comes of it we will let you hear further.

EXPERIMENTS IN FRUIT GROWING AT THE CENTRAL EXPERIMENTAL FARM.

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

It is a great pleasure to have this annual opportunity of meeting the representative Fruit Growers of Ontario. By coming to this meeting I get many hints which are useful to me in my work, and which will enable me better to forward the interests of the fruit growers of Ontario and the Province of Quebec. I can assure you I am very glad indeed to bring before you the results which we are trying to achieve at the Experimental Farm, because, as you know, the Farm is being supported by the people of this country, and it is only right that our work should be brought before you so that you may pass judgment upon it and offer any suggestions that you think necessary. The work was begun in the Horticultural Department of Central Experimental Farm in 1887, when Mr. W. W. Hilborn was Horticulturist. He began the orchards there, and continued in this work until 1889. In the spring of 1890 Mr. John Craig, the late Horticulturist, took charge and continued in that position until the autumn of 1897, and in the spring of 1898 I was appointed to take charge of the work. Mr. Hilborn began planting in the autumn of 1887. The farm began to get cleared, and he had a large stock of fruits on hand and he

was anxious to get an orchard started, so he planted out a limited number of varieties that autumn. The experience which was had that winter demonstrated quite strongly that it was not wise to do any fall planting in districts such as that at Ottawa. A great many trees died, and our experience with fall planting since, which we have done in a very limited way indeed, goes still further to demonstrate the ill effects from planting in the autumn. The wood of the trees seems to dry out, and they become more easily injured by frost. They are also liable to be heaved. It was not until the spring of 1888 that the main part of the orchards were planted, and during that year a very large number of the standard varieties and many of Russian origin were brought together, and every year since that time the number of varieties has been increased so that now we have about 700 kinds of apples growing in Ottawa. The main object in testing fruits at Ottawa was to determine their hardiness, productiveness, quality, freedom from disease and other points. Then in connection with this we were to try experiments with different methods of culture, different methods of spraying, etc. We have been trying to carry out all these different branches of work at the same time. The conclusions we have reached are that there very few varieties of apples indeed which are quite suitable for the Ottawa district. Out of the 700 varieties that we have growing, there are probably not more than a dozen which kill back at their terminal branches, so that we are not troubled with winter killing above ground, but the two principal causes of death among the trees are sun scald and root killing, and the third cause I may mention is blight, so that the apples that will withstand the sun scald, root killing and blight are the varieties which will succeed in Eastern Ontario and the Province of Quebec. As I said, we have only a very few apples which we could recommend. We have tested about 200 varieties of the so-called Russian apples, but outside of their usefulness for growing in the most northern parts of the country the newer varieties of Russian apples have not proved of value. Of the older fruits, of course the Duchess of Oldenburg, Red Astrachan, and Yellow Transparent are the three very good apples for their season. The varieties of apples which we have found from experience to be the best suited for growing in districts such as that at Ottawa are, for summer, Yellow Transparent and Duchess; for autumn, Wealthy; very early winter, McIntosh Red and Fameuse, where it can be grown with natural protection. We find that where we are at the Experimental Farm somewhat exposed, it does not do very well, but in the vicinity of Ottawa where it has some protection it does very well indeed. Then for the late winter we recommend Scott's Winter, Gano and Pewaukee, and also Salome. The other varieties which are perfectly hardy are Lawver, Golden Russet and Ben Davis. The Salome was originated in the States, and was one of our most promising apples; this one shown here was grown in Western Ontario; you will notice its color is yellow while the one grown in Eastern Ontario is red. That is certainly Salome, but they were not highly colored this year. I may say that the Salome is a very productive fruit and quite hardy. The quality I might also say is good; it is not high-flavored, but it is juicy and pleasant to the taste.

Mr. CASTON: Do you find the tree a thrifty grower?

Prof. MACCOUN: We have found them a thrifty growing tree. This is a McIntosh Red, which as you know was originated fifty or sixty miles from Ottawa. This we consider one of our most valuable apples, and for its season, the most valuable apple that we have growing in Ottawa. Fruit growers are planting very largely of this variety every year, and I think it is going to be one of our leading dessert fruits. Complaint is often made that this apple is a shy bearer, but we have not found it such at the Experimental Farm; it is not a heavy bearer, but it yields a moderate crop every year. For the past two years in succession we have taken two barrels of apples off a tree twelve years planted, so you see that is not doing badly. I believe in certain sections it is much troubled with scab, but in the Ottawa Valley we have very little scab, and we are not troubled with that disease. This is a small specimen of the Gano; they usually grow a third larger than this. This apple is a seedling of the Ben Davis, and I regret to say is no better in quality, but it is a very hardy tree, an early bearer, productive, and where apples of this quality find a market, I think it will prove quite profitable. Here is the Winter St. Lawrence, another hardy variety and which is doing very well in the Province of Quebec; it is a little later than the ordinary St. Lawrence. Here is the Kinnaird that is going to do very well in our part of the country. It has a flavor like the Northern

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Spy and although not quite so good in quality, is a very desirable dessert apple. The tree is growing in the most exposed part of the orchard, and has been there nine years. It seems perfectly hardy. It is one of the seedlings from the South-western States. Practically all the varieties we are recommending are of American origin, that is, the trees of autumn and winter apples. The best of the early apples are from Russia. I think we must look in future for the origin of our best apples to Canada and the United States, and I believe it is quite likely that we shall get our ideal apples from the South-western States, for this reason, that nearly all the apples which are originated in the northern parts of Canada are early varieties, and what we are after is a late keeping variety. Now if you can get a variety from the South-western States which combines hardiness and late keeping and good quality and other good points, you are going to get the ideal apple. The Ben Davis, although it is not of good quality, is perfectly hardy, and it seems to me that there are more chances of getting a late keeping variety from places where growth is longer in the season than it is to get them where the growth is very short.

Dr. SAUNDERS: What about the Swazie Pomme Grise?

Prof. MACOUN: It is not a late keeping apple. I have some specimens here. This is a hardy sort, and one of the most valuable apples for dessert purposes. It has a delicious flavor, and is well worth growing for home use. The tree is not very productive, and is not very thrifty on that account, will not prove perhaps valuable from a commercial standpoint. At the Experimental Farm we have been trying to originate some new varieties of apples, and as Dr. Saunders brought before you last year, his special work has been in originating apples which would be hardy in the North-west Territories. I think from the results which were brought before you last year you will realize that he has done very much work in that respect. Now we are trying to originate varieties which will be useful in Ontario and the Province of Quebec, and I have now some two-year-old seedlings which we are going to put out in the orchard in the spring, and I hope to get a good many hundred of them—seedlings grown from the best apples fruited at Ottawa—and I am hoping that from these we shall get a few varieties which will be better than any of those that we have. Prof. Hutt has stated that the best apples we have are from chance seedlings, but we must remember that those chance seedlings have originated over a very long period, probably two or three centuries, and I think the chances are much greater that we shall get some good sorts by a systematic growing of seedlings. We are also doing a little in cross breeding by combining the late-keeping qualities of some varieties with the dessert qualities of others, and I have chosen as the male and female parents the McIntosh Red and the Delaware Winter or Lawver. This Lawver is an apple which you can keep in an ordinary cellar for eighteen months. It just gradually withers up, and they can be eaten at the end of eighteen months, although of course there is not a great deal of juice in them at that time.

Mr. RACE: They keep better if kept from the air as you would in barreling apples.

Prof. MACOUN: Yes, they would keep in much better condition. The Lawver is moderately productive, of a high color, and the quality, although not highly flavored, is juicy, sprightly and pleasant. We think that by combining this very high flavored variety, the McIntosh Red, with this other kind, that we may originate some new sort which will be more valuable than any of those that we have. I stated that the chief cause of death at the Experimental Farm was from root killing. We have tried to prevent this by experimenting with cover crops and, I think, have demonstrated quite thoroughly, that the trees can be protected very much by the use of these cover crops. We have found that the best cover crop for the Ottawa District is the common red clover. By sowing this about the middle of July a very good stand can be obtained of from ten to twelve inches in height, and this will protect the roots of the trees in winter and hold the snow, and there is not nearly as much danger from winter killing.

Mr. MCKINNON: Does it encourage field mice?

Prof. MACOUN: We have not found that it has so far. Of course, the young trees should always be protected from field mice anyway, and it will not matter if the clover is there or not. No one should allow his young tree to go through the winter without protecting them in some way from field mice. I think young trees can be protected from sun scald by means of a tree protector which is now in use in the Western States, made of a very thin slab of wood which you can wrap around the tree and twist the wire

together, and this stands about two and a half feet wide and protects the trunk of a tree from the rays of the sun in the spring, and there is a good circulation of air between the protector and the tree. We have found that the sun-scald has not been nearly so bad when we used those protectors, and they will prevent the mice from getting at the trees.

Prof. HUTT: Put them on in the fall and keep them on in the spring?

Prof. MACCOUN: Yes, but it is not necessary. If you want to save your protectors it is better to take them off rather than get the weather all summer. In connection with these cover crops I may say we have tried several different methods of tillage in our orchard at the farm. As you know, the usual method recommended is to have a cover crop that you plow under in the spring, and then cultivate the orchard until July. I found that at Ottawa the soil, which is rather light, was very liable to be carried away with the wind, and it required something to protect the surface of the soil throughout the season, so that I found it was better to leave the cover crop all summer, as we do not suffer from drouth there, there being apparently plenty of moisture in the soil; so that instead of plowing the clover under in the spring we start cutting it with a field mower, and we have had as many as five good cuts from this clover during the season. By cutting it just when the bloom is showing you can save the strong plants, and your second, third and fourth crops will be almost as good as the first. In calculating the amount of green clover which was left lying on the ground I figured out there was about twenty-five tons left to rot on the surface of the soil. This is plowed under after two seasons, and the ground is re-sown with clover.

I mentioned to you that there are very few varieties of the better class of apples which were proving hardy at Ottawa. In order to see if we could not get varieties to succeed there that do well in Western Ontario, and other more favored parts of the Province, we are trying experiments in top-grafting, and have used as stocks such hardy varieties as Haas, Gideon, McMahan White and Hibernial. Those varieties are not subject to root killing or sun scald. The results so far seem to justify the conclusion that we shall be able to grow such varieties as Ontario, Northern Spy and Baldwin at Ottawa—whether for commercial purposes or not I cannot say, but at least for home use, as we have Northern Spy which has been fruiting for several years now, grafted on Wealthy, and although the union is not good the tree is perfectly hardy. We are also trying experiments with different kinds of stocks. You may remember that in his address last year Dr. Saunders spoke of his hybrids being originated from crossing the *Pyrus baccata*, the Siberian Crab, with some larger apples. This *Pyrus baccata* is very hardy, and we are using it for grafting other root varieties on, and we are hoping to get better varieties in this way. Dr. Saunders reminds me that our experience has been that Northern Spy grown in the ordinary way will not succeed there; the tree sun-scalds and root kills, and is quite a failure, but we have had several crops of good Northern Spy apples from being top-grafted. The conclusions, then, that we have reached in regard to apple growing in such a cold climate as that of Ottawa, are: that you must use warm, well-drained soil, use cover crops, and grow only the very hardiest trees, and root graft them preferably on hardy roots. In regard to pears, we have tested a large number of varieties at Ottawa, but very few kinds have reached the fruiting age. The varieties which have fruited are the Bessemianka, Sapieganka and Baba of the Russian varieties, and Longworth and Flemish Beauty of the American varieties. None of these varieties except the Flemish Beauty is worth growing anywhere where pears can be bought, because the Russian pears, although they appear quite hardy, do not keep any time; in fact, they begin to rot before they are ripe, which is a remarkable thing about them, and they are gone before you are able to use many of them. They are also very subject to blight, and on that account are not desirable to grow. While the Flemish Beauty is not perfectly hardy at Ottawa, we have one tree which has been planted since 1890 and which has borne several crops of fruit, and we are hoping that by grafting from this tree we may be able to get a hardier strain from that variety. So that our success in growing pears has not been great. We are in the position, however, to recommend people not to plant pears in that part of the country. We have tried nearly all the European kinds of plums that are advertised in this country, but find that very few of them can be grown successfully. Some seasons you would get a few plums, but in the majority of cases the flower buds are killed by frost, though the wood is perfectly hardy. The hardiest European plums we have found there are Glass' Seedling, Early Red, Richmond and Barnett's Yellow. The last three

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were brought from Europe, and are varieties which Prof. Budd was the means of disseminating. The Japanese plums are about the same as the Europeans at Ottawa. In protected places they have borne well in the vicinity of Ottawa, but when exposed the flower buds are killed by frost in the same way as the Europeans. The chief hope at Ottawa is with the American plums, and although perhaps they are not worthy of being spoken of when compared with the European plums, yet where we cannot get European they are very good indeed, and the fruit growers around Ottawa are planting them more extensively this year, some kinds now being developed by nurserymen being very good indeed. I might mention the following as those which we recommend, ripening in the order named:—Atkin, Cheney, Bixby, Gaylord, New Ulm, Wolf, City, Silas Wilson, Stoddard, Hawkeye, Wyant, American Eagle and Hammer. This is a selection taken from over 100 varieties, and I think comprises the best of those on the market, unless it be some kinds we have not been able to get. In cherries we have not had very good success either. The principal reason, however, is that the original orchard was comprised of trees which were grafted on the Mahaleb and Mazzard stock, and during the winter of 1895 and 1896 then there was very little snow on the ground nearly all the orchard was root-killed. Since that we have been grafting on wild cherry bird stock, and the results have been very gratifying indeed. These trees appear perfectly hardy, the fruit is perfectly good, and I think it would be well for any nurseryman to use this stock who proposes to ship to Europe or Quebec. We have trees bought in 1890 where the union is still perfectly good. The hardest cherries we have found so far are:—Amarelle Hative, June Amarelle, Shadow Amarelle Heart-shaped Weichsel, Griotte du Nord, Orel, Cerise d'Ostheim, Brusseln Braun and Koslov Morello. This covers a season of about five weeks.

Mr. CASTON: There are several under the name of Orel?

Prof. MACOUN: Yes. That is really Orel No. 25 that I speak of. We have been testing also a number of varieties of grapes at Ottawa; we have now 175 kinds there. The grapes have proved perfectly hardy as far as both roots and wood are concerned; we have no trouble from root killing. The system we adopt there is to cover the canes every autumn with earth, and then the snow comes and protects; but we cannot grow grapes there for commercial purposes unless it be the hardy varieties of wine grapes, which can be grown without going to the trouble of covering them with soil, which is very expensive and on that account is not practicable for use on a large scale. Of the varieties which are almost certain to ripen every year, and which are of fairly good quality, I might mention Moore's Early, Moyer, Peabody, Canada, Brant and Newmarket, and I think Campbell's Early may also be classed in this list. Then next are Wilder, Roger's No. 17 and Delaware. Then another class is Moore's Diamond and Brighton. Then in a class which do not always ripen early are Lindley, Agawam and Vergennes. These varieties do ripen some seasons at Ottawa, and we can get very fine samples of them indeed, but as a rule they do not ripen perfectly. That has been our experience with the large fruits, and I might also probably later on in the meeting give our experience with small fruits. I will be very glad to answer any questions.

Mr. MORRIS: How tall are the stems of your apple tree?

Prof. MACOUN: From two to four feet. We try to train our trees freely.

Mr. MORRIS: They are perfectly shaded at the top. I don't see how the sun scald occurs.

Prof. MACOUN: Our prevailing winds are from the south-west, and it is on the south-west side of the tree the sun scald occurs, and the trees all get a little sweep to the north-east.

The PRESIDENT: Do you plant your trees upright?

Prof. MACOUN: Yes.

Mr. MORRIS: We have the same trouble in the south here exactly in regard to that as they have. If a tree gets leaning to the north-east, that tree is going to die. It is very important to plant them leaning to the south-west, and see that they do not get over to the east, even if you have to stake them. The sun striking the stem when it is leaning that way is generally what kills them. Keep the tree leaning to the sun and it will not hurt them. Another thing is that many trees are ruined in planting out by cutting the tops off the first year. That exposes all the stems to the sun and the weather that year, and they are very much damaged even if they live through it.

A. H. PETTIT : Do you think the sun scald is caused in the summer time ?

Mr. MORRIS : Yes.

Mr. PETTIT : I believe it is caused from the sap in the winter.

Mr. BOULTER : Do I understand you that it is objectionable to cut the tops of the trees off when you are planting them out the first year ?

Mr. MORRIS : Yes.

Mr. BOULTER : You are selling trees, and we are buying them. Now, I put out 1,000 trees in 1878 and I cut the tops all off and I never lost one. I always thought if you had a trunk you could grow a top.

Mr. MORRIS : We are apt to cut off the tops to balance the root. Our forefathers always did it, our neighbors have done it, and everybody else has done it, and we think it the only proper way. But did you ever reason it out ? The root can not grow unless there is a growth in the top, and the top cannot grow unless there is a root-growth. They both want to go together. When you cut off the top of a tree and leave a few stems near the stock, it requires a great effort of nature to push those buds. Those buds do not start readily like those on the upper part of the limb, and the consequence is, when the buds do not start the roots do not start, and the roots not starting those buds do not start. (Laughter). Leave the whole top on ; that top answers other purposes besides growth. Those buds on the hundreds of these limbs, all grow a little ; they will help the roots, and then the roots will help to put growth in the top as well.

Mr. CASTON : There is not very much root there to start, that is the trouble.

Mr. MORRIS : It does not matter how much root there is. Anyway, you get altogether a very much greater growth in the root, the tree becomes a very much better shape that first year by leaving the top on than by cutting it off.

Mr. BOULTER : Do you advise cutting it off the next year ?

Mr. MORRIS : Yes, cut it off the second year just as you would the first year, and then it is ready to force those lateral buds and to become a good, strong, shapely tree next year. Now, there is another thing in connection with this. When you take the top all off you do not get a new top that year, you get a little growth, and that stem is exposed to the sun and it hurts that tree. Perhaps it will take years before it will recover the damage done that year. I am glad to say that I have induced one gentleman to adopt my plan last spring, and he reports to me so far that he can see it is a success, and I hope that he will come here and tell us at the end of two years how it has turned out.

A DELEGATE : Can you adopt that plan with the peach as well as with the apple ?

Mr. MORRIS : Not with peach ; I would say apple, pear and plum. I remember showing our president a few rows of trees in our nursery where the heads had been cut off, and a few rows along side of them where the heads had not been cut off, and the stems of those where the tops had been left on were double the size of those that the heads had been cut off. Do you remember that, Mr. Orr ?

The PRESIDENT : Yes, I do.

Mr. MORRIS : That just carries out the truth of my theory.

Mr. HAROLD JONES : You would recommend to trim off some of the lower limbs to balance the top a little the first year ?

Mr. MORRIS : I would not cut off any limbs the first year. If you cut that back three or four inches, leave the sap there and then cut that off the second year, and then the growth the second year will be strong enough to seal that over. When you cut it off the first year, that cut is exposed all the following winter and in apples often causes what is called the black heart.

The PRESIDENT : This is a very interesting subject indeed, and I am sorry that we cannot spend an hour at it. I have had considerable experience in planting trees, and I have no trouble with sun-scald, and I do not think the trees are killed by frost in the spring when the sap is in, I do not agree with Mr. Pettit in that. I have a thousand trees I planted, and in planting our trees we lean every tree to the west, so that a plumb line hanging from here (showing) would bring it out about 14 inches from the root. Just as soon as the foliage comes the trunk of the tree is sheltered. I have not a tree out of 8,000 or 9,000 that is sun-scalded where the top has protected the trunk, and scarcely a tree that is leaning over at all. About the fifth or the sixth year the tree, by the prevailing winds from the west, will be just about up straight, and then have suffi-

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cient root to maintain it there. I think it a most important thing, as Mr. Morris suggests, to lean every tree, heading it to the prevailing wind. When it grows and brings foliage I do not think you need have much fear of sun-scald.

Dr. SAUNDERS: I think this subject is one of very great importance, and it is well that we should understand it thoroughly. As I understand the discussion as far as it has gone, and Mr. Morris' views, he would not have you get a tree all mutilated in the roots, leaving the whole of that top on because that would be an unfair tax on the root system, but to leave plenty of terminal buds in order to fully balance all the roots that were left, and have those start promptly in the spring so that they would encourage a rich growth, and start at the same time, and the growth would go evenly and be well-balanced. It seems to me that it is a very philosophical way of looking at the matter, and to adopt the extreme method of cutting off all the top would be unwise, while to adopt the other extreme of leaving all the top on would be equally unwise, and by judicious cutting back, not too much, and leaving plenty of terminal buds, which, as Mr. Morris says, start the earliest in the spring, to encourage the root growth, I think the greatest success would be achieved.

A. H. PETTIT: Just one word, Mr. Chairman, in regard to your criticism of my remarks on sun-scald. Where do we find sun-scald? We are finding it chiefly in the northern and eastern portions of the Province. Now, the sun shines there just as hot as it does in the southern part. I claim it is the frost in the winter that ruptures the sap cells in the body of the tree, and the effects come out in the summer. I do not think the sun-scald is caused by the summer heat at all; it is caused by the winter.

Mr. L. B. RICE: I would like to ask Prof. Macoun if in trying different varieties for grafting he had tried the Tallman Sweet and the Liscombe. Several years ago one of our people made an exhaustive experiment extending through some fifteen years and different varieties, and his reports showed that the Tallman Sweet, which is a very strong root grower and the Liscombe were two of the strongest stock trees he could use for grafting tender varieties on. We have a great deal of experience with sun-scald, because we cannot set out a tree that is not scalded, and you will find the scald will show itself in trees planted in the fall or early in the spring. I set a good cedar post in the ground and set the tree on the northeast side of it and have no sun-scald. My theory is that in the coldest weather that we have, when it freezes so very hard, about three o'clock in the afternoon the sun shines out just enough to start the frost out on that southeast side and then it freezes again the next night and that kills the tree.

Mr. HUNTER: I must protest against the statement that it is in the winter that the trees are sun-scalded. I have a good deal of experience in both planting trees and assisting others, and I find that trees planted in the spring were sun-scalded during that summer quite frequently. I mentioned that at a meeting of this Association in Brantford some years ago, and stood alone on that question about leaving the top on the tree. I have set out seven acres this spring, and I have not a sun-scald in one of them, and I have the top on every one of them. That sun-scald is local. Up in the dry plain here we are subject to that kind of thing, and if we cannot get well rooted trees, and well protected from the sun during the summer, we cannot get them started at all. I have had experience in planting trees in Delaware, where we can get them started without any root at all. Even our maples do not stand the sun-scald in the summer here.

Mr. OASTON: I heartily agree with Mr. Pettit. I believe the injury occurs from this cause. It is about the time that the maple sap is running, and we have a very warm sun for two or three hours in the middle of the day, and on the southwest side of that tree, especially if we have a southern exposure, we have a special condition set up—heat in the middle of the day and winter temperature at night—and that repeated day after day is the cause of the black streak from the head of the tree down. You will find that where they are planted on a western or northwestern exposure they do not suffer so much, because generally there is a cool breeze from the west at that time, and where that occurs we do not have so much sun-scald, which is the cause of great loss to trees in this Province, and far worse in some localities than others.

Mr. MCKINNON: I have about two hundred pear trees planted in this way—the roots almost entirely cut off, the stems cut down to about eighteen inches, and it is the most beautiful lot of pears that I have, and I scarcely lost one, certainly not one in a hundred. It is a very easy way to plant and very satisfactory.

Mr. E. D. SMITH : It strikes me that this thing has proved itself in regard to the time of the year the tree is injured. It is admitted that in the Niagara District we may not be troubled with it, but they are troubled with it here and at Ottawa. Well now, the sun is certainly as hot if not hotter in summer in our district than in any place in Ontario ; therefore it is fair to assume that it is caused in the winter. Every nurseryman in Canada and the States sends out instructions to his customers all over the country to cut their tops back when they plant the tree, and urge as a reason for that that when such a large portion of the roots is cut off an equal proportion of the top must be cut off to balance the tree ; when the first buds that are started in the tree are started from the sap that is contained in the tree, and if a large number of buds were left on the top the sap is exhausted from the tree and it becomes unable before new roots are formed to furnish further sap. That, it seems to me, is the theory whether it is right or wrong. If it is wrong it is an exceedingly important matter that the whole country who are buying trees should be rightly instructed about this matter.

The PRESIDENT : I believe in the northern section where you get 20 to 30 degrees of frost your trees may be injured in the winter. It is usually on the west and north-west side of the tree that the damage is done. I believe in our section if a tree is properly planted and the trunk is covered by the top that we will have no sun scald. That has been my experience.

CANADIAN FRUITS AT THE PARIS EXPOSITION AND IN THE BRITISH MARKETS.

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

It affords me great pleasure to come before you to-day to give you some little account of the way our Canadian fruits have been received across the water at the great Paris Exposition and also to explain about the character of that exhibit. I may say that, standing by the exhibit as I did from day to day for a considerable period, scarcely half an hour would pass at any time but some one or group of individuals would pass by and look at these fruits all marked from Canada. It was the greatest surprise to those people that such fruits would grow in such a cold country ; they could not understand it, and they would ask for explanations and when they were satisfied they were bona fide Canadian fruits then they thought there was something in the glass that magnified them, or something in the fluids, and this they also had to be satisfied about by extensive explanation, and then they would pass on—" Ah, wonderful !"—they could not understand it. And this sort of thing was going on all day long with foreigners from all parts of the world, and I do not think Canadian fruits and Canadian climate and its character received so great an advertisement as has been given to the Canadian fruits this summer in Paris. Now let me explain to you, in a few words, the way in which this exhibition was got up and of what the exhibition consisted. At the outset it was decided by the Minister of Agriculture that this exhibit should be of such a character as to have representation of all our choice Canadian fruits from every important fruit growing centre in the Dominion, from the Atlantic to the Pacific, so that the visiting world there would be impressed, first of all, with the idea of the fine quality and character of our Canadian fruits, and secondly with the vast area over which those fruits could be grown, thus demonstrating to the world that Canada has practically inexhaustible resources in her growing and producing capacities.

To accomplish this we endeavored to enlist the services of prominent fruit growers and men who were interested in fruit in all parts of the Dominion. Beginning with the west, we got the local Government interested there. They employed the Deputy Minister of Agriculture to go through different parts of British Columbia, through the drier sections of the country in the interior and through the different parts of the coast climate. The superintendent of the Experimental Farm there was instructed to devote all the time necessary to gathering fruits in his part of the coast climate, and also to send a very good representative collection, which he did, from the Experimental Farm at British Columbia, where we have the largest number of varieties of fruits gathered together that is to be found anywhere, I think, in the world. With these two sources to draw from,

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and the assistance of a few isolated fruit growers, such as Lord Aberdeen, at Coldstream, who sent an excellent collection, and Mr. Thomas Earl, in the upper district at Lytton, we got together an extraordinary collection of fruits from British Columbia, that astonished everyone who examined them. In Manitoba and the Northwest the superintendents of Experimental Farms collected together all the collections of small fruits that were obtained, raspberries, strawberries, gooseberries, etc., and preserved these. It was decided to divide the exhibit into two parts. In one part we would have all the perishable fruits—beginning with the strawberries and extending to the early ripening pears and apples—we would have all those preserved in bottles in antiseptic fluids. While this would not preserve them in a fit condition to be tested as to quality—while they could not be eaten—yet it would give the visitor a good idea of their size, and form, and beauty, and general aspect. The Experimental Farm did the bottling work for British Columbia; and for the centre fruit was collected by the parties as I have explained. In Ontario a noble work was rendered by the Ontario Government, through Prof. Hutt, in collecting and putting into suitable jars a very large collection of Ontario products. I think there were about six or seven hundred bottles put up at Guelph in this way, and thus all the early perishable fruits were represented from the western part of Ontario. Mr. A. McD. Allan undertook the collection of fresh fruits and through him a number of people became interested in the matter. Our Secretary here deserves special mention for the attention he gave to the matter. Mr. A. H. Pettit also, and I think Mr. Murray Pettit, and a number of other people in the Niagara district, interested themselves in the matter, and we had a very excellent display from this section of the country. In the East Mr. Harold Jones furnished us with some very fine specimens. Mr. Whyte also furnished us with quite a number of small fruits of his own growing at Ottawa, and Mr. Macoun took a great deal of interest in the matter, and put up a very large collection of the fruits grown at the Experimental Farm, so that both the Eastern and Western parts of Ontario were well represented in this grand display which was brought together. In Nova Scotia Mr. Bigelow, the President of the Fruit Growers' Association, took the matter in hand and with the help of another gentleman, Mr. Ohas. A. Patriquin, a large collection was made of the softer fruits and a very good display of the late keeping apples brought together. Mr. Thos. Peters, Deputy Minister of Agriculture for New Brunswick, worked among the New Brunswick people and got a good collection of fruit, and Mr. Jeremiah Clark from Prince Edward Island, whom I see here to-day, did good work in bringing together all the varieties they could show. With the help of this machinery there were brought together about 1,500 jars of preserved fruit kept in antiseptic fluid, which, up to the present time, shows very naturally in most instances, their natural color and appearance and size, and were of great value to us in completing our exhibit by representing the sections of our fruits which could not have been shown in any other way. Besides that we had nearly 600 bushel boxes of fruit which were put in the cold storage in Montreal late in the autumn and early in winter, to carry on these exhibits of fresh fruit, which have been a surprise to all the visitors at the Paris Exposition and have done such credit to the country. These fruits were put in the Union Cold Storage Co.'s warehouse, and were kept at a temperature of as near 32° F. as we could keep them during the winter.

It was contemplated to send these over to France in March or early in April so as to get them to Liverpool before the hot weather would come, because we knew that there were no means of transporting them from Liverpool to Paris in cold storage—they would have to perform that end of the journey in the ordinary way. But there were delays in connection with the Exhibition Buildings; they were not nearly completed by the time they were promised, and there were delays also in our Canadian Building, in completing the cold storage facilities, and it was the middle of May before we could send those fresh fruits from Montreal to Liverpool, and it was about the middle of June before we could get them from Liverpool over to Paris. They were, however, kept in cold storage all the time except during the journey from Liverpool to Paris. It was in the middle of June, when the weather was hot, and they were nine days after they started from Liverpool, though sent by the quickest route that could be had, regardless of what they would cost in reaching Paris. It seemed a matter of surprise to me that, after going through such a perilous journey, they came out as well as they did, but it did affect some of the softer apples, such as the McIntosh Red and the Fameuse and

two or three other varieties of that class. They did not show as well as they would have done if they had had a fair chance, but all the later keeping varieties of winter apples were practically perfect when they arrived in Paris. They were then put into our own cold storage under the Canadian Building, which was fitted up with shelves all around so that the fruit could be unpacked and every imperfect specimen discarded, and we thus had perfect specimens kept there at about a freezing temperature, and they remained there with various accessions to the quantity, and, drawing from them continually, we were repeating our exhibit of these late-keeping fruits until the close of the Exhibition in November. We did not ship all the fruits at once. 150 boxes were sent from Liverpool the first shipment. The next shipment of 100 boxes was made some time during August, and they got over in six days, and the third shipment got over in five days, and the fourth shipment was made after I had left to come home and I have not heard yet how many days that took to get over, but I suppose it would not exceed that length of time, so that we improved in the way of rapidity of transit after we got into the way of handling the thing better, and these later shipments of fruit reached Paris under still more favorable conditions than the earlier ones. The bottled fruit had rather rough usage. It got to Paris before the buildings were completed; it was sent over in good time but, amidst the mass of material that was accumulated, they were shoved around from one point to another, and though the boxes were all marked strictly "this side up," yet our manager tells me that they were almost always found that side down whenever they were found (laughter). There was no regard whatever to the way in which these packages were left when they were left to themselves, and as these stoppered bottles, when they are jolted about, are liable to start the stoppers, we found when we came to open the packages that a great many bottles had leaked out more than one half of the fluid, and then, when the cases were turned over, of course it would jam up the fruit in a soft condition and destroy it. The stoppers were tied down with a piece of cotton, but in some cases the cotton had not been wet before tying, which should have been done, and the little play that was allowed was enough to start the stoppers the least bit, and then when it was once started that little bit the fluid would gradually ooze and drop out, and, when left for a week or two with the cases turned over the wrong side up, you can understand that the stoppers, which were imperfectly ground, would be almost sure to leak more or less. However, when I reached Paris on the 6th of June, I found there were about in all 1,200 bottles of fruit, preserved in fluids, out of the original 1,500 which had been put up, that were in very good condition. We had between 900 or 1,000 of those in the Horticultural Pavilion where the great display of fruit was made, and then we had about 250 bottles in the Canadian building, where they were used to lighten up and decorate the other parts of the exhibit, more particularly the grain exhibit, and also being put there for the purpose of showing those visitors who might happen to go there and not see the Canadian fruit elsewhere, to give them some idea of the fine quality and character of the fruit we were growing here. The cold storage facilities provided at Paris were very good. But for this we could not have made the showing we did, nor secure the number of awards. It would have been impossible to have carried on the exhibit for any length of time. It was a little late in being completed, but when finished it served its purpose admirably. Now, many people have been surprised at the number of awards that were made to the fruit. In proportion to the exhibits, the awards to the fruits were much larger than they were with regard to any other class of exhibits that were made, and I want to give you the reason for that. Where all those perishable exhibits such as fruits and flowers and vegetables were concerned the judges were required to meet every three weeks. Sometimes the limit of time was not much more than two weeks, but the average was three weeks during the entire exhibition so as to judge all the fresh material that was brought together. The larger part of the Horticultural display, that is the flowers and vegetables, were only shown for four or five days every three weeks. After that interval everything was carted away; the ground, where the flowers had been, was dug up and fertilized, got ready for the next display, so that, when the people were ready to bring together their next display of flowers and vegetables, the place was all clean and orderly and ready to receive them again. Now, this concourse of the judges, as it was called, which occurred every three weeks, gave us good opportunities to get a renewal of our premiums. We had an abundant supply of fruit in the cellars of the cold storage warehouse all arranged on shelves. Every day

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our collection was gone over by those in attendance, and if there was an imperfect specimen it was removed and a perfect one brought up and put in its place; but when the judges were about to appear on the scene again the whole collection was put away and an entirely new one brought out of the cold storage chambers, so that the judges did not have to judge the same material; they judged on an entirely new collection, and our 500 boxes of apples gave us room to make a fine display every two or three weeks during the entire exhibit, and never show to the judges any fruit the second time. In that way we got awards first of all for the Dominion and the different Provinces; we got awards for the Honourable Ministers of the different Provinces; we got awards for the Fruit Growers' Association of Ontario and Quebec, for Nova Scotia and Prince Edward Island and British Columbia, and we got towards the last a few awards for some individuals, including gold medals for our worthy Secretary who had done a large amount of work in connection with the exhibition. Besides getting these awards we have two or three times got the Grand Prix, which is an award higher than anything represented by medals, whether they be bronze or gold or silver. On the 4th October I was in Paris awaiting the arrival of the first consignment of fresh fruit which was sent over from here some time in September. I believe it was about three weeks from the time it left Canada until it reached Paris, and I have all the details here in connection with every box of fruit that was opened as to how everything came out, and in the majority of cases the fruit came out in a most satisfactory condition. The peaches were the only exception—the only instances where there were any considerable number of the fruits decayed—and, as those were the most difficult subjects to carry, I give you the particulars of the two or three packages of peaches that were opened in my presence. There was one case of Elberta peaches, which were wrapped first of all in waxed paper, then with soft manilla. Thirty-five of that hundred were perfectly sound and were displayed, and astonished the visitors at their size and magnificence; twenty were more or less spotted with decay, forty-five were wholly or partially decayed.

Mr. MCKINNON: Those had been five days without cold storage.

Dr. SAUNDERS: At least that. They had been sent to Liverpool, and then transhipped from Liverpool to Paris. There were 25 Lord Palmerston peaches sent in a case with some other material; they were wrapped in double brown manilla paper; 18 peaches out of 25 were in perfect condition, 7 were more or less spotted, and those that were in good condition were tasted by the judges and the fruit found to be in fine condition and very high in flavor. The other one contained 100 specimens of late Crawford. Of these 31 were perfect, 14 were a little bruised, 55 were partly or wholly decayed. I think, considering the soft texture and easily injured character of this particular class of fruit, it is astonishing that we got so many specimens in perfect condition, considering the long journey they had to make, and the long time occupied in making it, and that part of the journey was made without cold storage.

Mr. MCKINNON: Do you know how long it was, after they were packed until these were unpacked in Paris?

Dr. SAUNDERS: I could not say. I have no particulars of the time they were packed. I think I could find you the exact number of days from the shipment in Montreal, but the Secretary could tell perhaps whether those were delayed at all after they were packed.

The SECRETARY: They were a few days in ice storage at Grimsby and two days from Grimsby to Montreal on refrigerator car.

Dr. SAUNDERS: I will give you a duplicate list of some of the varieties of fruit which are not supposed to keep very well. Take for instance the Chenango Strawberry apple. There were 25 specimens sent in one case, packed in soft manilla paper and the spaces filled with excelsior. The specimens were sound but most of them were slightly bruised and this variety seemed to show these very slight bruises in rather a characteristic way, which led those of us who were there to pronounce this apple as not a profitable one for shipping to Europe. The Alexander apple of medium to large size, well colored, came out all quite sound where the packing was well done. There was a case, No. 31, of Mr. Woolverton's, every sample of which was sound. There was another case sent from Quebec which was put in a box without any packing at all and not very tightly packed, nearly all of which were bruised as you might expect; but, whenever care was

taken, even apples of that texture came through in the most wonderfully good condition. Flemish Beauty pears came through in excellent condition. Duchess apples from New Brunswick came through perfect. Apples from Montreal such as Famense, Gravensteins and Red Gravensteins from Nova Scotia and from Ontario, and a number of other varieties of that same character came through in perfect condition. There was a case of Souvenir de Congres pears that came from Grimsby. The case was lined with excelsior, with moss for packing, the fruit was wrapped in waxed paper, the outside wrapper being plain tissue paper. The specimens were large to very large, and they were all in perfect condition. That variety of pear, I should judge, is not easy to ship.

The same testimony was had with regard to the Bartletts and other pears having that character, and I think the fruit growers and all those interested in that subject may be very much encouraged by the state in which that first shipment of fruit reached Paris. All the varieties of apples, which we know as our good apples, came through, without exception, without a bruise, and they were carefully packed. Excelsior was used in packing them, which you know is an elastic material and which I think should be used much more in packing fruit in the future than it has been in the past. When going through the markets in London and examining the condition of our barreled fruits as they were opened from Ontario and Nova Scotia, it was lamentable to see the number of bruised specimens which presented themselves whenever a barrel was opened. The ordinary practice of filling a barrel up and then pressing it down by means of a lever by sheer force, is a practice which must necessarily be associated with the large number of bruised specimens. I had a good opportunity of seeing, in the American exhibit, the results of using excelsior. Ellwanger & Barry sent a selection of pears in half barrels. There was a wad of excelsior at the bottom and one at the top, and out of eight or nine specimens of pears, four or five of each, there was scarcely a bruise on any one of them, with the exception of a few that were over ripe. I believe it would pay shippers to Europe to test that thoroughly, by putting three or four inches of excelsior in the bottom of their barrels and instead of pressing them down with a lever or a hay-press—that hard wood coming in contact with the apples—to have a good thick layer of excelsior between the fruit and the cover, which would be elastic enough, I think, to keep the fruit perfectly tight until it was unpacked. The English buyer would very much rather have one or two layers of apples left out of a barrel and have them all sound than have 25 per cent. added to the weight of the fruit and have it come out in a bruised and unsightly condition. Now the second shipment of fruit reached Paris about the end of October. By that time I had returned to this country and Mr. Allan was in charge. He says, "I enclose list of results of last shipment of fruit, which was evidently satisfactory and we have been able to carry everything before us. I feel particularly proud of the Grand Prix which we have taken for Export Fruit." At this last exhibit at the close of the fair, Mr. Allan arranged the fruit in a different way from what it had arranged before, by packing it in all the different forms of packages which are used in Canada, commercial packages, both of the old fruit and the new fruit and putting it up in baskets of various sizes, some of them fancy baskets and some of them plain, so as to show an excellent commercial exhibit, and for this commercial exhibit, right at the close, we took another Grand Prix, which was very gratifying. He says, "I feel particularly proud of the Grand Prix for Export Fruit, which included the cold storage apples from 1899 and apples packed in all the kinds of boxes we use, also barrels, the whole forming a display that would even astonish any of us, the effect was so fine. I had also baskets of every size neatly packed with kinds to suit the various sizes. I am still after the Jury to try to get other prizes for our Fruit Growers' Associations and large growers. I have made very large sales and am afraid to make more, as I have to deliver from the various British ports, and it will take time and will require my personal attention. I have succeeded also in making some important contracts which is very gratifying to me. I can see such connections can be followed up with great results to Canada, even in the far distant lands. I have made two important sales of apples in Alexandria, Egypt, which I have to pack and despatch from London." He also speaks of other business transactions, which he has made in connection with the fruits of this country, showing that there are large avenues still open for all the fruits we can grow. From what I have been able to see, I firmly believe that with first class packing first of all, and selection, and suitable arrangements made on the other side, there

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would be an outlet for ten times as much fruit as Canada is able to produce at present, and that the fruit would then reach some considerable portion of the people, whereas there is scarcely one in ten, of all the people I have met with, who have ever heard of or seen Canadian apples. We send, I suppose, 500,000 barrels of apples to Liverpool, but they seem to disappear. I was dining with a friend, a prominent scientific man of Liverpool, and he said to me, "Can you tell me where I can buy Canadian apples? I have inquired, and I never can find any in the market; I would like to get some, but do not know where to look for them." This is in the very city where we send the bulk of our apples. I suppose they disappear and go into the surrounding district. I didn't have time to inquire into that, but in London I inquired from different dealers what they thought of Ontario apples. "Oh," they said, "we don't often get any Canadian apples, all the apples we get are from Nova Scotia." (Laughter.) All the apples I saw in the market were from Nova Scotia and they did not recognize that as part of Canada. The Nova Scotians have captured that market, and from what I have been able to learn they make much better prices the season through for their apples shipped to London than the Ontario shippers do with their apples shipped to Liverpool. The opening of the Manchester market by the canal seems to have given quite an impetus to Canadian fruit. You would think that Manchester, only 30 miles from Liverpool, would get a large part of our apples, but they never seem to. If one of our shipments go to one of the large cities it never seems to find its way more than a few miles out of that city. I do not think any fruits that go to Liverpool find their way to London, or Bristol, or Glasgow, or any of those large places where fruit is consumed. And it seems to me that the fruit exports of Canada ought to be divided so as not to have them in such vast quantities in the one place, and I believe in that way better prices would be realized, because when there is a very large glut in any one market there are parties always ready to take advantage of that glut and try to run the prices down, so that they become unremunerative to our growers here. There was one thing that struck me in the Covent Garden market, of the lack of what we would call intelligent handling of fruit. I will give you an example. In looking over the stock there for sale I found a number of baskets of Vicar of Wakefield pears. To eat a Vicar of Wakefield pear in the summer time is quite an undertaking. I don't suppose any of you would attempt it—(laughter)—but everything that goes in that market has to be sold the same day. It is sold to a dealer, who sells it the next day to a customer, and the consumer buys it to cook or eat, and he cooks or eats it the next day: he has no chance to store it away waiting for it to ripen, that has never occurred to him, and all the intelligence that is required to get fruit into the market at the proper time must be exercised at this end of the undertaking, no trust being put in the intelligence of people, in that respect, at the other end. I have no doubt that the man, who bought those Vicar of Wakefield pears, would conclude that the pears that came from that country, whether Canada or anywhere else, were not worth eating, because he would have quite a task I am sure to masticate that pear, if he tried. I was also impressed with what I heard about the Keiffer pears, which I mentioned a while ago, and I believe it is injudicious for us to undertake to send to the British market, or any foreign market where we want our trade to enlarge, fruit of inferior quality, even if you can sell it for a time at a fair price. This impresses so many people with the idea that that is the best Canada can produce, and we don't want that impression to go abroad, and then in a little while it is attended with bad effect on the general trade of the country. This dealer told me candidly "They are nice looking pears, but they don't seem to command the same attention, or bring any way near the same figure, that they did some time ago." I told him I thought the reason was very obvious—that people were tired of eating that kind of stuff, they were poor in quality and a person buying them once would not care to buy them again. These Vicar of Wakefield pears were sold from 3 shillings to 3s. 6d. a basket, whereas the French Duchess and King apple sold for 8 and 9 shillings at the same time. Fine Gravensteins from Nova Scotia, of which there is hardly a higher flavored apple to be had in the world, were selling from 12 to 16 shillings a barrel. At the same time selected Fameuse sent over from Montreal by Mr. Sheppard, for the Army and Navy stores, were being sold at a guinea a bushel, every apple perfect, every apple of the same size, every apple without blemish and packed in bushel boxes. The day before I was in the Covent Garden Market one of the dealers told me, "Yesterday Ribstons sold here, selected apples, just such as Mr. Sheppard puts up

for the English market of his Fameuse, selected Ribstons and selected Cox, Orange Pippins sold at 30 shillings a bushel in the Covent Garden Market." There are plenty of people who are ready to give any reasonable price for nice fruit, but if they open a barrel of apples and find perhaps 15 or 20 good looking specimens and five or six twisted, knotty and a few spots on them they won't give within four or five shillings a barrel for such apples, or 10 shillings a barrel in some cases, as they will where the specimens are all selected. Then another thing that is important in connection with the market in London is to have the fruits all the same size. If you open a barrel of Spys or Kings and find some specimens one third larger than the others, the smaller ones may be called big enough to be called first-class specimens, yet the impression given to the purchaser is that the large ones are the best of the fully developed specimens and all the smaller ones are culls and imperfect. If there are different sizes to be sent, by all means send them separately. The larger ones will always get full price, more than the medium sizes as a rule, but the medium sizes, if they are not mixed with the larger ones, will command two or three shillings a barrel more when they are opened, if they are nicely sized, than they will if you put them in all different sizes. It is only necessary for us to understand these things to have our fruit growers take hold of that, but I hope that some of those who are packing for Europe will try that method of packing with excelsior, which I believe is about 1½ cents a pound. It gives no flavor to the apple; it is made of hard wood generally.

The PRESIDENT: It can be got for \$17 a ton in Toronto.

Mr. CASTON: Could there not be a cheaper packing?

The PRESIDENT: There is nothing cheaper than that.

Dr. SAUNDERS: It is elastic and springy and there is a give and take to it, and if we can have our fruit opened up there, nice, even-sized selected specimens, sound and free from blemish, you will be surprised at the prices such fruit will bring, provided they don't get into the hands of a commission man who has got some end to serve and who will attempt simply to sell some other person's fruit that is not so good.

Mr. RICE: Do you place the fruit directly on the excelsior?

Dr. SAUNDERS: Yes, that is the way Ellwanger & Barry packed those pears. The idea of using the excelsior is to relieve the apples from the hard pressure that is given them from the hard cover of the barrel when they are screwed down, to retain them.

Mr. RICE: Would not the excelsior tend to affect the flavor of the apple unless it was wrapped with something to keep it away?

Dr. SAUNDERS: We could not find any evidence in any instance of the fresh fruit that was exhibited at Paris, of any flavor having been given to it where excelsior was used, which was I suppose in two-thirds of the packages that we got over in such perfect condition. That is why all of us who were there were so much impressed, in seeing our own fruit and seeing how the United States fruit came out where this material was used as a packing, with the importance of trying this on a still larger scale so that we might get the full benefit of it.

Mr. McKINNON: How do Canadian pears compare in size, flavor and juiciness with French pears?

Dr. SAUNDERS: The Canadian pears are equal in my opinion, as far as I could judge, to the French pears, but they are not superior. I do not think they are superior in point of flavor. The market was full in France of such pears as Duchess and Buerre de Clairgeau and Louise Bonne de Jersey; these are the three varieties that are mostly grown in France. There were also samples of Buerre de Hardy, which were fine, and some other sorts we had a chance of testing, and while our Canadian fruit was fully equal to anything we saw there, I could not say it was any better.

Mr. CARPENTER: Are the Duchess grown in France of the same quality and flavor as Duchess grown here?

Dr. SAUNDERS: As far as I could judge.

Mr. McKINNON: I had a letter from my son in Paris saying that the French fruit exhibited at the Paris Exhibition was not to be compared with our Grimsby fruit for a moment, in either size or flavor.

Dr. SAUNDERS: Well, I believe in people being loyal to their country, and saying all they can for it, but I cannot go any further than I have gone (laughter), and Mr.

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Hamilton is an exceedingly good judge, who was there with me, and Mr. Allan, we all concluded that our fruit had nothing to lose by comparing it with French fruit; but you know the French pears are very high in quality, and you could not persuade a Frenchman that we had anything that was equal to the French pears, but I don't think they were quite as open to conviction as we were, and we had opportunities of seeing some very fine exhibits. What probably gave your son such an idea as that was this, that the French fruit was not in evidence all the time, as our Canadian fruit was. Their fruit was shown with flowers three or four or five days every three weeks, between the periods of judging, and then they were removed and nothing seen of them until the next exhibit. Our fruits were there all the time, and handled every day by the great mass of people that went there, and we had a much greater opportunity of making favorable impressions than the French people had themselves. They had, however, one exhibit, the 26th of September, which was quite a surprise to me. Up to that time I had reached the conclusion that the size and quality of the French fruit had been somewhat exaggerated, but they got together the most magnificent collection of pears I ever saw in my life anywhere. There were about two hundred varieties and they were very large and very choice, and there were quite a number of them that were new to me, and some of them, I should think, should make very fine shipping pears to Europe, and I made arrangements to get scions, or new trees, of most of those sorts while I was there, so as to have some of them tested at our Experimental farms. Some single exhibitors showed as much as 200 varieties of pears, and they didn't go in for any, or very few of the smaller sorts, they were nearly all large sorts. I have a list here, covering three pages of my notes of the varieties that I saw, and later on, when we have had these tested at Agassiz—which is the only place where we can grow these pears successfully—to make them available so that they may be tried in other parts of Canada—I hope to report on these.

Mr. MCKINNON: Will your report be published?

Dr. SAUNDERS: The report of the Exhibition will be published. I shall very probably incorporate this in the Exhibition report. Now, to show what can be done with even very soft fruits, the New York Experimental Station sent over to Col. Brackett, who was in charge of the United States fruits, a collection of about 50 varieties of pears, and among these, there were, I think, about 12 or 14 varieties of American plums. Those are among the softest fruits that we have to handle; while the skin is a little thick the plum is so juicy and soft that I had no idea they could be carried that distance and still be shown presentable. Among those fifty varieties, however, there were about two-thirds of them came out in good condition. I will give you the names of some of those that I saw that were practically perfect: Wyant, Hawkeye, Fall Pride, Loomis, Nonsuch, Archbishop, Duke, Moyer—these are mixed-up American and European varieties—Golden Beauty, Copper, Belle de Septembre, Lafayette, Diamond, Yellow Egg, Jefferson, Aitken, Prince of Wales, etc. There were about forty of those varieties on exhibition for nearly a week, before they began to give way, so that I think the evidence we have accumulated in connection with the Paris Exhibition is such as to show that even the softest fruits by taking great care in packing and in handling can be carried a long journey like that and still come out in good condition; and if that be the case, who can say that such apples as the Duchess cannot be sent over, and other fruits that we can grow in great quantity, which are infinitely harder in texture than these fruits that we have been speaking of? Gentlemen; there is no practical difficulty in the way.

Mr. E. D. SMITH: Do you know what part of the States these were from?

Dr. SAUNDERS: From the Experimental Station at Geneva, in New York State. I do not know whose apples Mr. Allan was handling, but he told me he had sold 4,000 boxes of Duchess in Liverpool before he came on to Paris at very good figures; and if one man can get over 4,000 and sell them to advantage there is no reason why others should not do the same thing. I believe there is a great market for our summer apples there. I was surprised in going through the large cities in England, during the month of August, to find that they had not anything there practically in the way of fruit except a few oranges. There was the greatest scarcity of fruit, and the early apples, miserable little things not very much bigger than Transcendent Crabs, a home growth, were being cried up in the streets as wonderful samples that everyone was invited to buy, and they were such apples as we would not think of doing anything with except making cider of

them; and at that season our early apples would I am sure bring good returns to the senders if they were well put up and proper arrangements made for ventilating the ship, or giving them cold storage on the way over.

Mr. MCKINNON: What is your idea of the export of peaches; is it likely to prove a success?

Dr. SAUNDERS: I do not think peaches are likely to prove sufficiently remunerative taking one lot with another to warrant their being sent over in quantities. I have not really investigated the matter very largely, and I am giving only my personal opinion, but there was a good display made in Liverpool from the last lot that was sent over in cold storage. I think they were sent over under the auspices of the Ontario Government. It is well worth a trial that we should send them over, and they fetch such good prices that even if you get half of them there in a sound state, that might probably pay very well; but what I would certainly wish to hold up as a branch of trade that might be developed with great profit, is the shipping more generally of the early summer apples such as will carry fairly well, and such apples as we have in great abundance and do not know what to do with. I believe they will bring remunerative prices there, and I do not think that our fruit growers or our people anywhere will have any reason to advocate the cessation of further planting of fruit trees for fear that the market will be over-stocked. I do not think there is in England at the present time one person in five who has ever tasted Canadian apples, yet they would be very glad to get them if they only knew how to proceed to do so. There is a great prejudice in England in favor of Canadian goods, and it is one of those conditions of mind which we ought to make the very best use of that we possibly can and get our end of the business worked in with all the energy and force that we can command. (Hear, hear)!

Mr. MURRAY PETTIT: Do I understand you to say that these Cox Orange Pippins that were sold for 30 shillings were grown near Montreal?

Dr. SAUNDERS: They were grown in England, and these were a select lot which had been shown at some exhibition, I think in London, and they were offered for sale and they promptly sold for 30 shillings a bushel. The Army and Navy stores are selling Fameuse at a guinea, that is 21 shillings a bushel. I fancy more of them would have been taken at the price, if they had been available.

Mr. SHUTTLEWORTH: It is a very limited demand when you get to those high prices; I have been there; when you get beyond a certain quantity the consumption drops right off.

Dr. SAUNDERS: Have you ever seen any perfect samples of apples offered for sale, well sized, even in color, and in perfect condition, such as those Ribstons, and those Cox's Orange Pippins were, and did you ever see any of those sold at a low price?

Mr. SHUTTLEWORTH: Yes I have seen them sold in the Cochran case even. There is one thing I would like to mention and take issue with. The knowledge of Canadian apples is much more widespread than one would gather from Dr. Saunders' remarks. I am inclined to think the Doctor's friend is an astronomer.

Dr. SAUNDERS: No, sir, he is a zoologist, (laughter), and there is no part of the world he has not hunted over for animals, but he is not a pomologist.

Mr. SHUTTLEWORTH: A great many Canadian apples have been sold heretofore as American apples, but it is not so now—Canadian fruit is being sold all over.

Dr. SAUNDERS: I said I did not think there was one person out of five that had tasted Canadian apples. Well, there are six millions of people in London alone, and if a million and a half had been consumed that would have been probably all we have sent over. There was another matter I was going to mention, and that was the importance of having our apples branded. In going through Covent Garden Market my friend would say in looking at the Nova Scotia apples: "Now, here is such a man, there is no need of opening his barrel, nobody wants to have the head taken off, we can sell them at a higher price than that of these people who are not so well known." He mentioned several lines where the character of the brand was sufficient guarantee of the quality of the fruit, and when that was once established in the market there was no difficulty in selling any quantity of that brand. Mr. Allan told me his great trouble was in supplying these orders. If he went into the market and took hold of three or four thousand barrels of apples, and they were sent over by ordinary packers, he would have to over-haul them all, and there would

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probably not be half of them that would stand the test of examination. I presume there are quite a number here in the Niagara district, gentlemen, who have been established a long time, whose brands are well known, and I have been told that their experience is much the same, that their brands will generally sell their apples at a little higher than the ruling price for fruit at that particular time, showing how important it is, that we should try and sell such fruit as we can over there, on which it will be self-evident from the brand that the fruit is of the character it claims to be. There has been too much fraud practised; I say fraud, I do not think it is characterizing it too strongly—(A voice, "Not a bit.")—in marking a barrel first-class when you find in the middle of it perhaps half a barrel of third-rate apples; and when people have been two or three times misled by buying such apples it is very apt to discredit the fruit to a very large extent. We cannot be too careful about the quality of the fruit, and about the sizing of it and about packing it well, and if we do our duty at this end of the line, I feel certain we will reap our reward.

The PRESIDENT: Is there a possibility or a probability of the production of the Bienheim Orange apple being largely increased in England?

Dr. SAUNDERS: No, I do not think it. The English people are moving very slowly in the improvement of their orchards. I was through Kent and Devon, and some other counties where fruit is grown largely, and I saw very little good fruit. The nurserymen are all growing good varieties of apples, and in the exhibits they were showing plenty of good apples very well grown, fine specimens; but you go through the country and I believe that fully one-half the specimens are seedlings; they are poor in quality and in many districts they are grown for cider; and what astonished me more than all was in going through France. I went down in Normandy where apples are grown very largely, and there is quite a considerable portion of the land given up to apples there, all grown on trees that begin to branch at about eight feet high, so that the cattle can get around underneath and the horses plow the land, and the cattle pasture on it without any danger of injuring the fruit, but I scarcely saw a good variety of apple in the whole country—they are nearly all cider apples. In discussing with the pomologists there who claim to understand what is desirable for fruit in their country, they claim in the first place there is no cider in the world equal to the Normandy cider, and the Normandy cider, to be first quality must be made from these miserable little crab-like specimens, some of which are sour, some are bitter, some are acid, some awfully astringent. I tried a number of them on the trees, but these intelligent men, arguing with me, said, "This is the natural way to make good cider, we have proven it." I said, "Do you take any definite proportions of any of these apples?—Here is an apple that is sour, here is another that is intensely sour, another one bitter; what proportions do you use?" They said, "Oh, we do not consider that question at all; we have to have a mixture, and it is when we have the mixture we can make the very best cider that the world can procure." I must say I could not drink the cider. (Laughter and applause).

A. H. PETTIT: I want to express my great pleasure in hearing and gaining so much information from Dr. Saunders' remarks in regard to our fruit in the British market. I have no doubt there is a good deal of ignorance among the masses of the people at least in regard to the quality and the capabilities of our country in the production of fruit. In regard to packing fruit in excelsior, I fear we may get in the position I got in this year in shipping apples to the British market. Last winter I had the pleasure of being present at the annual meeting of the Nova Scotia Fruit Growers' Association, and there the discussion of the apple barrel came up. I was very much taken with the shape and form of the Nova Scotian apple barrel, being a little bit shorter, and not so wide in the bilge, so I came home with the intention of having such barrels made to ship in myself this year. I will show you the difference between our barrel and theirs. (Placing one barrel on top of the other). Now, the teetering and jarring from this part of the country to the British market would be such that every apple in that barrel must be bruised, but the Nova Scotian barrel will lie so that the quarter hoops rest one on the other, and the bilge scarcely touches it. Therefore it will preserve the fruit from bruising. Now, the quantity contained in those barrels is not so important as the condition in which we land them in that market. If we can land them there in prime condition we are all satisfied we will get a reasonable price, if not a good price. I think there is nothing

better than excelsior to use in packing our fruit. I believe we can land peaches in the British market in prime condition—(Hear, hear)—if we will only take the pains in packing and can secure accommodation, and this we as growers cannot secure ourselves. We are not sure of our fall crop every season, far from it. We have our light crops and our full crops. Our steamship companies say, "Providing you take the whole space, then we will give you the temperature you require, if you fill the space." We cannot take the whole space and keep it, but if through the Government's assistance they will secure for us cold storage at proper temperature, we will place any of our summer fruits in the British market in good condition. I do not think there will be any trouble in that respect, but one or two things have to be guarded against. With the Hanrahan system we would get a circulation and pure air. If you get those two conditions, and then get the space, I am satisfied the fruit growers of this country will have no trouble in filling the space, but they cannot do it under the conditions that have existed in the past; one shipment will arrive in good condition, and another will not. It shows faulty atmospheric conditions in the compartment. Last winter I had the pleasure of talking to a gentleman, who though he did not know much about the fruit business, had built in the steamships of this country pretty nearly all the cold storage compartments, and I asked him what he thought about our fruit shipments in cold storage. He said, "You will never succeed in landing fruit in the British market under the present system of compartments upon your steamships; they are not suitable for the fruit business; they are capital institutions and right for anything like butter and cheese and one or two other products, but if you put the fruit in those compartments it will not succeed." Now, I don't believe we will have the least difficulty in landing the most tender varieties if we will only use care in packing and picking from the tree and placing in cold storage under this system with a current of air which throws off the impurities as they arise, the ice giving you a cool and pure atmosphere. Let there be no delays. When the ripening process is commenced you cannot stop it. It is like decay in meat; if the decay commences at the bone you cannot prevent it afterwards. I am very thankful and pleased to hear Dr. Saunders' remarks in regard to wants of the British public in the way of fruits. We are probably as ignorant of their wants as they are of the existing conditions in our country. In regard to the Vicar of Wakefield pear, I have always understood and have frequently been told by men who ought to know, that in England they rent these out to place upon the table as ornaments—they are not supposed to be eaten. (Laughter). I supposed that was the reason our people had been shipping those Keiffer pears; they would be good keepers, and they were very nice looking.

Mr. CASTON: The great trouble in the old country shipments is the slacks, and the object of the pressure of the barrel in packing tightly is to avoid slacks. There is something in the shape of the barrel as Mr. Pettit pointed out.

REPORT OF COMMITTEE ON GRADING AND INSPECTION OF FRUIT.

The President called for the report of the Committee on Grading and Inspection of Fruit.

A. H. PETTIT: We do not wish to submit a report that cannot be passed, therefore I think we should carefully consider this matter before we discuss it and ask for any amendments or additions to the present Act. Both sides of the House were opposed to this Bill when it was before the House. I would suggest that you appoint a committee covering the whole Province as near as you can to discuss carefully the ins and outs of this Inspection Act, and, if you can improve or in any way assist the Government to get a measure through that will fill our requirements, I would urge you most strongly to do so.

The PRESIDENT: You will remember that a committee was appointed last year to carry out the wishes of this Association in regard to grading and inspecting. That committee has met during the year and has done some work, and they have prepared a Bill which has been sent before the Minister of Agriculture for the Dominion, and, as you know, presented to the House. Now this Association has never heard that Bill,

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unless it has been read privately, and I think it would be well if the chairman of that committee, Mr. Pettit, would present that Bill for the consideration of this meeting, so that we may debate it and hear the opinions of the gentlemen present in regard to it, and at the close of that discussion appoint a committee to embody the particulars that are brought out by that discussion.

Hon. Mr. DRYDEN: Is any one able to say whence the opposition to this Bill came? Your public men are but the exponents of public opinion. They will drift wherever the public opinion is likely to go. The opposition Mr. Pettit speaks of, which was seen in the House of Commons, was originated somewhere. Now I do not think it originated from such men as we have here. Where did the opposition come from? What was the underlying thought in it? My impression is that it came from the dealers. (Hear, hear.) You see they are a different class of people from what you have generally represented here. You had better ascertain that, and then ascertain why, and get at the bottom of the difficulty. If there is any real objection, then you gentlemen ought to know it and ought to try to meet it, because you cannot expect legislators to carry out what they believe is not in accord with public opinion. They will bring politics into it. They see it is not politic to do it.

E. D. SMITH: I read the discussion that took place in the House, and I do not take it that you can strictly say that those gentlemen were, many of them, opposed to the Bill; they were rather criticising it and seeking to get it into shape. Almost every member of the House agreed that something should be done, and that an Inspection Act of some kind or other should be put on the statute book; but as was perfectly right, men on both sides of the House met with criticisms in regard to various features of the Bill. I believe that if the Bill had been pressed it would have been passed in some shape. A year's experience in packing and handling apples, since that time, has brought to the attention of apple packers particularly, many features of the Bill which were not thought of at the time; and I think that discussion in this meeting by the best men in the fruit industry in the country would bring out points that would enable a committee to be appointed which would perhaps suggest some improvements on the Bill as it was brought before the House.

The PRESIDENT: I will ask that the Bill be read, and then we will hear from a gentleman representing the Apple Packers' Association of Ontario.

The SECRETARY read the Bill.

Mr. EBEN JAMES, representing Woodhall & Co., Liverpool: The question has been asked where the opposition came from to that Bill, and I beg to say that one of my clients who exports some 10,000 barrels in a year, wrote very strongly to the Government protesting on the ground that while he might handle any quantity of apples in a year it was impossible for him personally to see to the packing of the fruit, and while his intentions might be of the very best, in many cases packers were not reliable, and where he was responsible for from 1,000 to 10,000 barrels he might ship, he might incur a terrible penalty on himself and it would be very unfair because he could not guard against it.

A. H. PETTIT: Our committee should represent the fruit industry all over the country as widely as possible. If we can, without injuring the Bill, meet the wishes of its opponents, let us do so, and put it in a shape that it will be carried. If we make it arbitrary and contrary to the wishes of the public it will be difficult to enforce it, therefore, let us give it careful consideration before we ask for any changes in the matter. I seriously think a report read at this meeting before we had discussed this matter fully would be the worst step to take in regard to the amendment or the further urging of the passing of that Act.

The PRESIDENT: I will ask Mr. Shuttleworth to speak.

J. M. SHUTTLEWORTH: I may say that I do not represent the Apple Shippers' Association, but if I may preface my remarks by a few words I should like to say that last week at a meeting where between 200 and 300 apple shippers met, this Bill was condemned in its entirety. I did not agree with that condemnation. There are some points in this Bill that I think will be of great advantage to the export industry. The position that I have taken is this: Why make this Bill applicable only to apples and pears for export? Why not make it applicable to everything? (Hear, hear.) Why make fish of one and fowl of another? There are just as many fraudulently packed packages in peaches and grapes and plums as there are apples. I have sometimes been ashamed even to own

the Canadian apples that were shown in Liverpool—ashamed almost that I was a Canadian, from fraud in the packing, and that is why I will support with all my influence and energy a Bill which is brought forward to punish fraud in the packing of fruit, (hear, hear); but I want it applicable not only to apples and pears for export, but to everything. There should be no difference. If fraud has been perpetrated upon a purchaser or consumer of fruit in Great Britain, if you are going to punish him, why not punish the perpetrator of fraud upon a consumer here in Canada? (Hear, hear) I think you will all agree on that, and I do not see that there should be any objections to that. The main object I have in regard to the inspection of fruit is this, if this export fruit trade is worth a rap it should be nursed in every way, shape and form. While I am not an extensive grower—although I do grow some apples—I am interested in the export fruit trade possibly as much as any one here. I have been in the export fruit trade for the last 24 years; I have been at both ends of it; I have had my ups and downs with it, and I have seen some of the difficulties, and have been fighting every year since I started for honest packing, and almost fighting single handed in a great many ways. Now we know that in shipping there is nothing we have so much trouble with as in getting despatch. You have had this trouble with perishable fruits, as Dr. Saunders has mentioned. That is almost as important with apples as it is with other fruits. If these apples must be inspected where are we going to inspect them? We cannot send an army of inspectors through the country to do it; it is impossible. We cannot inspect them at the station, because we would have to have an army there. If you are going to inspect them at Montreal it will kill the trade, because we cannot get the fruit away quick enough now. It will delay shipments sometimes a week or two weeks.

Hon. Mr. DRYDEN: Is that the idea of the Bill?

Mr. SHUTTLEWORTH: I think so.

The SECRETARY: A barrel of apples is subject to inspection, that is all.

Mr. SHUTTLEWORTH: A barrel of apples that has been once inspected can never be put back in the same shape that it was before, and that means that the shipper has got to lose it; the Government will pay for it. I would certainly not pay freight on it.

Hon. Mr. DRYDEN: That is not my understanding of what was proposed. I did not understand that anyone proposed that you were going to inspect every barrel that went across for export or anything like it, but I thought that they were declaring a law against fraudulent packing, and that they were appointing certain persons who would have a right to inspect, but who might not inspect probably any of yours for some time, but once and a while, if they had any suspicion, they would have the power. You would know that and try to protect yourself. Now I think that is the way the idea was intended to work out. We have a law on our Ontario Statutes in the same way in reference to these small fruits. Persons packing strawberries or raspberries in little boxes are liable to get into trouble under that law, but there is very little of it done; the very fact that the people know that that is the law and that they are liable to that trouble, makes them take pains to pack their fruit right. I understood that was the thought of this Bill.

The SECRETARY: Yes, that is it.

Mr. SHUTTLEWORTH: That may be, but the point is this: suppose I make a shipment to Montreal, the Inspector goes and he opens up one or two barrels of apples that I am shipping; those one or two barrels I might as well throw away here and not pay freight on them.

Mr. DRYDEN: You could sell them.

Mr. SHUTTLEWORTH: What would we sell them for?

Hon. Mr. DRYDEN: I do not think you would lose so very much that way, but I do not think that is the right place to inspect; I think the inspection ought to be done some place nearer home if you are going to have any inspection.

Mr. SHUTTLEWORTH: But the trouble is it will take almost an army of men to do that.

Hon. Mr. DRYDEN: You are quite right, if you are going to have any inspection at all it must be along the other line; somebody must have the power to inspect without compelling them to inspect, because if you compel them to inspect you cannot carry on your business.

Mr. SHUTTLEWORTH: That is what I say; you cannot carry on the business if the inspection is compulsory. My objection is first, that we ought not to make one branch

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of the trade a scapegoat; another is that you cannot inspect them at the port of export; and a third is, why compel me to have my fruit inspected? If you are suspicious that bad work is done, then I grant that you have the right. Because every barrel that has been inspected I have to lose upon, there is no compensation. If there was compensation I would say, all right, inspect them, because that very safeguard would be a safeguard to myself. The great trouble has been in the past, any fault in the packing has been largely the result of buying what we call in the trade "lumping orchards." (Hear, hear.) The men who buy those apples are very often sent out to do that work. They will underestimate the crop and then endeavor as far as possible to gain the confidence of their employer by making numbers of barrels so as to make the deal look well. I can confirm that.

Mr. OASTON: That is true.

Mr. SHUTTLEWORTH: If I buy apples, as a rule I buy them at a price for first-class fruit, and I am paying for first-class fruit. Generally speaking the fraudulent packing is not done by the buyer who operates himself, and who under this bill would be punished for the offence of another.

Mr. MCKINNON: Would not the results of this bill be to prevent the buying of whole orchards and to cause buying by the number of barrels of really No. 1 as they happen to be in the orchard?

Mr. SHUTTLEWORTH: It might help it, but I don't think you can compel a man. You must not interfere with trade.

Mr. MCKINNON: If he refused to buy in that way would it not be fair that he should lose by employing incompetent packers?

Mr. SHUTTLEWORTH: He usually does lose, because when these apples are turned out the fraudulent packing is known more by the people who buy the fruit than it would be by the inspectors. When the fruit is shown in London, or Liverpool, or Glasgow, one barrel is turned out in a large basket and it comes up in a hydraulic hoist, and you see whether it is properly packed or not. I think the Government has taken the right step in sending a competent man over there and getting the names of the shipper and the packer of the fraudulent barrels and exposing them here; and, if there is any thought that this fraud is being operated continuously, such a packer's apples should be inspected here. I think that is very fair.

Hon. Mr. DRYDEN: Would not the ideal system of packing these apples be that the man who produces them should pack them? It does not make any difference who does it, if they are required by law to be packed in a certain way, the man who puts the mark on them is responsible. Would not that be an ideal system instead of your sending an army of men around the country, a sort of professionals? For instance, I have a little orchard, ought not I to be the man who should be responsible for the packing of those apples, then let the inspector come along and fine me if I am doing wrong; then you who are the dealer would feel that you were guarded. You say, "This man has picked those apples, he has marked them so and so, he is responsible, and if I find that there is anything wrong I will see that he is punished." How would that work out?

Mr. SHUTTLEWORTH: I do not think there is one grower in fifty who knows how to pack apples.

Hon. Mr. DRYDEN: They would learn.

Mr. SHUTTLEWORTH: They would learn, but during that education who would pay for the losses?

Mr. CARPENTER: Is it necessary that the apples should be inspected as they are inspected in the Old Country, or is it enough to take the head out of the barrel and look into it and pack it up as good as it was before without any injury to the fruit?

Mr. SHUTTLEWORTH: He can't do it.

Mr. CARPENTER: He can do it so as to tell you whether they are good or bad.

Mr. SHUTTLEWORTH: I have seen a barrel of apples packed so scientifically that until you got into them you could not tell where the robbery was. It was there, all right, but the bad ones were inside.

Mr. CARPENTER: I venture to say that in 99 cases out of 100 he would be caught if the inspector took one stave out of the barrel.

Mr. SHUTTLEWORTH: I know some packers that I will defy you to catch them.

The SECRETARY: What would be good sizes for the variety named?

Mr. SHUTTLEWORTH: Take Spy this year, may be three inch apple would be a fair size. In another year or another district, two and a half

The SECRETARY: Why not mark two and a half inches on the barrel?

Mr. SHUTTLEWORTH: The trouble in doing that is that it is almost impossible to grade them straight in that way. You could not get over the ground.

Mr. TWEDDLE: Use a grader.

Mr. SHUTTLEWORTH: I do not think it would be possible to use a grader, the time will not allow, I will give you my reasons as stated in my letter to Hon. Mr. Fisher. (Letter of May 15th, 1900, read.) I do not know that I have anything more to say in the matter. I shall be very glad to do what I can. I am as much interested in this fruit trade as anyone possibly can be. I have been at it a long time, I understand thoroughly the great many difficulties we have to contend with now, and I have been ashamed of the fraudulent packing as it has turned out in Liverpool, Glasgow, and London market, and particularly in 1899 the fraudulent packing was very prevalent, and was a disgrace to the country.

A DELEGATE: Is that in the fault of the apples or the slacks?

Mr. SHUTTLEWORTH: No, sir, it was the fraud of the packing. An Englishman knows when he sees it turned out whether it is a fraudulent packing. He knows where the fraud is, and if he pays for fruit he will have to get the best price he can for it.

Mr. MCNEILL: What is the cause of that fraudulent packing?

Mr. SHUTTLEWORTH: A great many operators bought orchards and erred in judgment in sizing up the quantities on them, and they wanted to hold their credit with their employer, and they made barrels, it didn't matter what they were made of.

Mr. BOULTER: They ought to have gone to an evaporator.

Mr. SHEPPARD: Yes; a good many ought not even to have gone to the evaporator.

Mr. MCNEILL: It was not, then, the fault of the grower, but of the employee?

Mr. SHUTTLEWORTH: Yes, more than anything else. There were no doubt orders given in some cases to make as many barrels as they could out of the orchard.

Mr. BOULTER: That is not so prevalent this year?

Mr. SHUTTLEWORTH: No, I think the fear of this Bill has had something to do with it; it has been a deterrent.

Mr. BOULTER: Do you not think the loss of the money to the shippers themselves has had something to do with it?

Mr. SHUTTLEWORTH: Yes, and the fruit was better than it was last year.

Mr. EEBEN JAMES: I think it is rather a hard matter to examine the stuff in Liverpool, for the simple reason that the season is very short and the probabilities are that when you have packed your apples it will be fourteen or fifteen days before they are sold in Liverpool, and if that fraudulent packing is just discovered, unless a man cabled at very great expense it would be another ten days before a letter would return, and in the meantime this man has several thousand more on the way. While the apples would sustain some little damage in being examined at the port of shipment, I think it is the only place they can be examined and I think the benefit to the trade generally would accrue by taking out a barrel now and again, providing the best care was taken to replace the apples and have only experienced packers to replace them. The loss would not be very great, and the benefit would be so much that it would more than overbalance. We cannot wait for one month to have the returns in from Liverpool to know how these men are shipping, and, as stated, it would be impossible to keep agents at every station to examine the goods as they go through. Cheese is bored in the same way. A man might argue that because a cheese is bored it is damaged. Well, it is damaged to a certain extent, but what dealer in cheese objects to the small percentage of the carload being examined that the whole may be classed? I think the same thing applies to the apples. It would be less expensive and it would be beneficial to the shipper himself, because he is informed himself of the fact that such a car that he shipped has not turned out right, and he is telegraphed to and he can find out what packer it is that is not doing his work right. He may have twenty-five different packers all over the country, and if he has some slight countermark on the barrels he can spot the man at once, and it is for his benefit as well as that of the buyer in England.

Mr. ASHTON, representing the Exporter's Association: I should say that the best way to get over the difficulty would be for the fruit-growers to have their local associa-

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tions to pack their own fruits and have an inspector there to look after it, as they do in California. That would get over the fraudulent packing of the fruit.

The SECRETARY: I hope that the apple exporters will fall in line with us by and by. Some of us in Grimsby have been trying this method of sizing our apples, something after the manner that was suggested by Dr. Saunders in his address, putting a uniform size in a package and labelling on the outside the minimum size in that package. Our apples, for example, were labelled on the outside, diameter $2\frac{1}{2}$ inches, then the next size was $2\frac{3}{4}$, the next 3 inches, etc., so that, when the buyer bought that package, he knew there was nothing in that barrel less than $2\frac{1}{2}$ inches, etc. He knew exactly the sizes he was buying. We found that to be a very fortunate undertaking, a very wise course. Through that means I have secured a customer in England, who has ordered by size, and when he orders apples he says, "I want so many $2\frac{1}{2}$ inch and so many $2\frac{3}{4}$," and he pays accordingly. He is willing to pay for graded fruit accordingly. Not only that, but I got another order from Newcastle in the same way; and I am confident that we could get double the money for our fruit put up in that shape, if we could establish the confidence of the English buyer so that he knew exactly what he was buying, and he would not need to wait to see the apples to know what they were; we would not then have to ship on consignment because the buyers in England would simply order from us so many apples of such a size; and I believe it would solve a great difficulty, and Mr. Shuttleworth would find by and by that it would work out to his advantage as well as to ours. Perhaps he might not ship on quite such a large scale—a single shipper might not be able to handle so many and get them all graded—but he would get more out of them. Allow me to show this package. (Package with printing on outside, "Variety, diameter, shipper's mark.")

Mr. SHUTTLEWORTH: I do not raise any objection to the sizing of the apple, but to the compulsory inspection where the loss would be sustained by the shipper; another thing is that it cannot be very well done on this side or at the port of export. I object also that the export fruit trade alone should be made the scapegoat.

Mr. ELMER LICK (Oshawa): I think that for some time it would be impossible that any Act for the compulsory inspection of all apples could possibly be put through, or carried into effect even if it were adopted. We have not the machinery to do it; we don't know what would be needed. But is it not possible to establish under Government supervision and inspection some grades which shall be carefully inspected? I do not think that the inspection of three or four barrels out of a carload would be a serious injury to those apples, if carefully done; a few more barrels could be provided to put in, or an extra head to tighten them up all right. I think the only place to inspect them is at the shipping port—(Hear, hear.)—because you have no full control of them in any other place. The only place is at Montreal or the other port of shipment, allowing shippers to use a brand and prohibiting anyone else from using it, and if the apples do not come up to the grade on inspection, then remove the brand and substitute something else. Every man must put his name on that packs apples. (Hear, hear.) Some men are packing apples in Oshawa at present, and what are they doing? They are putting up 100 barrels of No. 1 apples in good shape; there would be perhaps 40 or 50 barrels of seconds. Do they put their own name on the seconds? Not a bit of it. Do they put on any definite name or brand on the whole? No; they put a brand on about 15 or 20 of a certain name, and then put another one on 15 or 20 more—trying to create the impression that it is the farmers that are dishonest and send over those small lots, and they are all bunched up in the carload. (Hear, hear.) I do not want to be forced to give away this information, but I happen to have been appointed one of those employees. An apple buyer came into my orchard last year, and he bought apples and offered every cent they were worth, and more, I thought, and we sold them. What did he do? He took 100 barrels of stuff out of that orchard that never ought to have gone into barrels, only to the evaporator, and he sent them to the English market under some such roguish brand as I have indicated. Now, we have got to stop that sort of thing. (Hear, hear.) How are we to do it? Go right straight at it, and ask the Government to give us something that we can all unite on. I do not think it is very hard; I think it can be done easily. I believe Mr. Shuttleworth and every man here will agree that we can put the minimum size of our apples on the barrel. In time we can work up to fruit that will be a greater advantage to us than the firsts and seconds. I have been like others—when seconds would bring a good price I have shipped them. I think we would have

made more money if none of us had shipped seconds over to the English market ; but if we are going to do it, always put our name on and insist on everyone doing it. I hope before another year comes round the Act will be passed, and will be put on a working basis that will help us to maintain the name in the English market for our apples, which, I am sorry to say, is not as good just now as it ought to be. (Applause.)

Mr. McKINNON : Let me call attention to one statement of Mr. Shuttleworth's—that that it would be impossible for large packers having gangs out all over the country to see to the proper, honest packing of all the fruit that they export. It seems to me there is a fallacy in the assumption upon which that statement is based. Is it at all necessary that Mr. Shuttleworth or anybody else should ship 10,000 barrels of apples? Is it not better that he should ship only 1,000 barrels of apples and do it right, and let nine other men ship the other 9,000, than that Mr. Shuttleworth should ship so many apples that he finds it impossible to grade properly? To use a vulgar phrase, some apple packers bite off more than they can chew properly. Let us have more packers that can attend to their business more closely, and hold them strictly responsible, and let them grade their apples so that there will be no doubt about it, and that they will not be afraid of inspection. During Mr. Shuttleworth's remarks on inspection I was reminded of the saying of a very wise man of old, "The wicked flee when no man pursueth." (Laughter.)

Mr. SHUTTLEWORTH : I do not want you to infer that I am standing here and denouncing that Bill altogether. What I want to get at is the man who fraudulently packs apples or any other fruit, because in doing that I am being protected, and that is what I want to be.

Mr. McKINNON : We do not want to protect you ; we want to catch you.

Mr. SHUTTLEWORTH : I would infer that you mean that we fraudulently pack, or other men fraudulently pack. I say no, shippers do not ; it is not to their interests.

Mr. McKINNON : They allow others to do it that they may build up a big trade.

Mr. SHUTTLEWORTH : That is not so. How many apples would you say this country would have sold this year if it had not been for the operators?

Mr. McKINNON : What we want is small operators who can attend to their business.

Mr. SHUTTLEWORTH : I quite agree that a great many more men would make more money out of a thousand barrels than out of 10,000 barrels under present conditions. To punish the men who fraudulently pack is what we would like to have done, and I think those one or two clauses are all I object to.

Mr. McKINNON : Those one or two clauses are what just fit.

Mr. LICK : A man may come into our section and buy 6,000 or 7,000 barrels of apples ; do you mean that man, or the man who does the work?

Mr. SHUTTLEWORTH : The man that does the work.

Mr. LICK : In one case we sold our orchard by contract, and the men were to put those apples in, and they said, "We don't want to do it," but the man who bought the orchard said, "Yes, everything has to go in"—and they shoved the dirty and the wormy apples in the barrels.

Mr. SHUTTLEWORTH : He is a fraudulent man.

Mr. LICK : According to your argument the man that put them up would be punished, and not the man that really was to blame.

Mr. SHUTTLEWORTH : I think the law would get hold of him as well as the other, so that if he gave instructions for his employees to do that he would be punished.

Mr. LICK : Is it the employees of the fraudulent man or the fraudulent man who gave instructions? From what I have seen in many years I think that it is the buyers.

Mr. L. B. RICE (Port Huron, Mich.) : I am an outsider and ought not to say anything, but I think that this whole thing is class legislation. Last night I attended our Merchants' and Manufacturers' Union Association, and we had a long discussion about butter, and after spending the whole evening we concluded it was class legislation and unconstitutional entirely, and that we were on the wrong track. As with butter, so with apples. If an apple man can have special legislation in his favor, next the potato man comes up and he must have special legislation in his favor, and next the butter man and next the cheese man and next the lumber man, and all the men in the country, every man must have special legislation. What kind of lawyers are you going to get that can carry all this thing in their heads, so that they can carry a law suit through? What kind of a judge can you get that can give you any kind of a decision? Now, make a law

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that any man who commits a fraud in any way in putting up any sort of a package, or material, is a criminal one, and when you get that man see that he is prosecuted. (Hear, hear.) Let your apples and your potatoes and your butter and everything else go, but make general legislation, so that you will hit the whole thing, and then you can't be accused of class legislation, and you won't have other men coming in and asking for legislation for themselves.

Mr. BOULTER: Any man who puts goods up or offers them for sale should have his name on them. Fifteen years ago we had a statute passed at Ottawa that is very short; it just means that, if I put a can of goods up and do not put my name on it, I am liable to \$2 fine on that can, \$24 on a whole case. We investigated a case in Montreal and the fine on that one car of goods was \$12,000, but the whole thing was reduced to a nominal fine. Another case was withdrawn from Toronto and the goods sent to Montreal and re-labelled. I think if you insist on the name of the packer being on the barrel of apples you are going a long way in remedying the evil. In our country last year the buyers went wild, and men were ruined up to \$30,000, \$40,000 and \$50,000, and the bank would not advance them a dollar this year to buy apples. Last year they bought orchards, and instructions were given that something must be made out of them, and apples were packed that should have been ground into cider. I saw apples in Liverpool and London that I was ashamed of. A man handling 1,000 barrels would probably handle them more particularly, but if Mr. Shuttleworth gives proper instructions to his men he can properly handle 10,000, but he should put the packer's name on them.

HON. MR. DRYDEN: Who is the packer?

Mr. BOULTER: If I am in the business and go out to buy apples in this country I should be responsible for what I do. Mr. Shuttleworth should be responsible for the men that he sends out to buy apples. Let him instruct those men, and if he hasn't a man that is good enough, discharge him and give \$1 a day more and get a man that will do what he tells him to do. His duty is to send a man around once and a while and see that these men are doing their duty. You can soon remedy this evil if the Government insists on making the man who handles the stuff responsible. I am responsible for the stuff that I put up. Mr. Shuttleworth should be responsible for sending out men that are proper and right, and then Mr. Shuttleworth must put his name on the packages.

Mr. SHUTTLEWORTH: I want to do that.

Mr. BOULTER: Discharge the man that doesn't do the right thing. Mr. Dryden's idea, was something like the inspection of our cheese factory. A man soon gets caught that leaves his milk can out in a rain storm. (Laughter.) A man does not like to be caught red-handed in it. You would not have to inspect a whole car. Inspect one or two barrels, and if one or two or three barrels of that car turn out bad, dump the whole car, and you will stop this fraud in a little while.

Mr. RACE: The purpose and spirit of this Bill is all right, but it seems to me that you are aiming at removing the evil in too short a time. Why should not a bill be drafted to operate in this connection the same as bills are in connection with other evils that we have? Take the License Act for example. If this Bill was drawn up with all those provisions, with the penalties attached, then appoint an inspector for a county, or a group of counties, and give that inspector similar powers to a license inspector. It is not supposed that a license inspector is going to drop on to a hotel keeper and make an inspection of every class of liquor he sells or of the trade he does, but that hotel keeper is liable to be dropped upon at any time. Now, if you had three or four inspectors for the Province of Ontario under the provisions of this bill, every man that was packing apples would feel that he was liable to be dropped upon, and after a year or two this thing would correct itself: but you can't correct it in a year. I have had some experience in drafting legislation, and I think I could draft a bill with the penalties attached and with alert inspectors so that it would impress the fact on every man that was packing apples that he was liable to be dropped upon. An inspector should have power to drop on those barrels of apples in the orchard, or at the point where they were being shipped, or in transit, or at the port of shipment and, if the people knew that they were liable to be dropped upon any time by an inspector, this thing would soon correct itself.

Mr. EBEN JAMES: The apple business only runs from September, and by the end of November everything is in store, and to go and appoint inspectors all over Ontario at remunerative salaries would entail a great deal of unnecessary expense. I think one or

two inspectors at the port of shipment would be all that is necessary, The system of buying up the orchards is acknowledged on all sides to be a bad one. I may safely say the instances given by Mr. Lick are an exception to the rule, and there is no one so interested in having good apples packed as the man that buys apples by the barrel from the farmer.

Mr. CASTON: But they are not buying them that way, that is the trouble.

Mr. JAMES: Yes, but they will buy them that way. This year they have been bought more by the barrel than they have for two years.

HON. Mr. DRYDEN: This year is an exception. This year the price is away down.

A. H. PETTIT: The matter has been pretty well discussed, and I think the growers as a body are in favor of the Bill. Who is opposed? Is it the buyers? I understand Mr. Shuttleworth to say that the National Association of Buyers condemned the Bill in toto.

Mr. SHUTTLEWORTH: No, no; the meeting the other night condemned it because they did not quite understand the Bill; they wanted it to cover everything, and there were some clauses in it that they wanted eliminated.

A. H. PETTIT: If the shippers of Ontario are opposed to this Bill, I would suggest that a large committee of this Association representing all parts of the Province ought to invite all shippers to join us and discuss it together—(hear, hear)—and if we can amend it in any way to suit all, let us do it.

The Secretary then moved, seconded by Mr. H. J. Snelgrove, (Cobourg), that this matter be left in the hands for committee to report to-morrow, at the first convenient opportunity after conferring with the apple shippers present. After some discussion and suggestions, the following committee was appointed: A. H. Pettit, G. O. Caston, W. H. Bunting, E. D. Smith, T. H. Race, T. H. P. Carpenter, E. J. Palmer, H. J. Snelgrove, D. J. MacKinnon, Elmer Lick, J. M. Shuttleworth, R. H. Ashton. Carried.

Mayor Cockshutt then extended to the members a cordial and hearty welcome to the city.

PRESIDENT'S ANNUAL ADDRESS.

By W. M. ORR, FRUITLAND, ONT.

It is a pleasure for me, as presiding officer of this Association, to welcome you all to our annual meeting.

For forty-one years this Association has been holding these conventions in the different cities and towns of the Province, and, as a result of its missionary work, very many horticultural societies have sprung up in its wake, which are fostering and developing the latent fondness for gardening which exists in almost every breast. Our forefather, Adam, was a gardener, and if the human race has inherited a predisposition to sin, just as surely has it inherited a love for gardening. There is a truer pleasure in occupations and amusements which bring one in touch with nature, than in any other occupation or form of amusement. I do not believe there could exist a really good man who did not in a more or less degree admire the natural beauties of garden, orchard and forest. The poets, the interpreters of our passions and indefinable yearnings, are pronounced on this point. Says Whittier:

“ This day, two hundred years ago,
The wild grape by the river side
And tasteless ground-nut trailing low
The table of 'he woods supplied.

“ Unknown the apple's red and gold,
The blushing tint of peach and pear;
The mirror of the Powow told
No tale of orchards, ripe and rare.

“ Wild as the fruits he scorned to till,
These vales the native Indian trod:
Nor knew the glad Creator's skill,—
The joy of him who toils with God.

“ O painter of the fruits and flowers!
We thank Thee for Thy wise design
Whereby these human hands of ours
In nature's garden work with Thine.

“ And thanks that from our daily need
The joy of simple faith is born;
That he who smites the summer weed;
May trust Thee for the autumn corn.

“ Give fools their gold and knaves their power;
Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower,
Or plants a tree, is more than all.

“ For he who blesses most is blest;
And God and man shall own his worth
Who toils to leave as his bequest
An added beauty to the earth,

“ And soon or late to all that sow
The time of harvest shall be given:
The flower shall bloom, the fruit shall grow,
If not on earth at last in Heaven.”

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There is material in these thoughts of the influence of this occupation on its followers for a long address, but I must refrain.

During the season of 1900 we have suffered the usual attacks from insect enemies, but by a persistent and timely use of the spray pump, we are now able to successfully combat most of them. If we are to continue in the fruit growing business, we must make up our minds to fight these insects for ourselves. Our natural allies, the birds, have been so decimated through the wantonness of sportsmen and unthinking boys, that we have now more than our fair share of the fight to wage. We are now reaping our just reward for the destruction of our feathered allies. True, we have an Act for the protection of insectivorous birds, but who enforces it? It appears to be no one's special business and so is neglected. In the meantime the small boy and hungry pot-hunter from the towns roam at will over our fields and orchards and shoot everything they see. Even the little songsters do not escape. By this wholesale slaughter the horticulturist and agriculturists lose heavily. In justice to ourselves we should prohibit shooting over our farms. These people should be warned against trespassing, and heavily fined when caught. A little united effort is required, but it appears this is just what the good-natured farmer will not consent to put forth.

After the excitement caused by the appearance of the San José scale we have had a comparative calm. However, many think it is the calm before the storm. At the demand of the fruit growers in badly infested localities the Provincial Government has abandoned its original plan of destroying infested plants, but is enforcing fumigation of nursery stock, and an effort has been made to induce the fruit growers to apply the whale-oil soap treatment for orchards. Large quantities of caustic potash whale-oil soap were imported by the Department of Agriculture and sold to growers at a low price to induce them to experiment with it. You will hear this subject fully discussed during the meeting.

The Provincial Government has granted us legislation in the matter of bandaging trees for the destruction of the codling moth under the Noxious Insect Act. This is a local option act and, although only approved of May 24th, 1900, it has been adopted in our own Township of Saltfleet, and I am very sanguine of its successful operation. This Act is a great boon to fruit growers and should be generally adopted. Men who will continue to breed noxious insects, without a reasonable effort to control them, should and can now be forced to destroy them, or submit to penalty.

The fruit crop of 1900 has been a splendid one in the Niagara Peninsula, and fairly good over the Province generally. Fruit growers have shared in the general prosperity of the country. The demand for our produce has been greater and prices decidedly firmer. The prospects for next year's crop are good. The trees and vines have made and matured an abundance of excellent wood, and the fruit buds are plentiful and in good condition.

During the year just closed, Canadian fruit has won high encomiums and golden opinions at the Paris Exposition, a full account of which has been given you by Dr. Saunders. During the coming year we will have the opportunity of exhibiting our produce at the Glasgow Exhibition, and at the Pan-American Exposition, in reference to which latter exposition Prof. VanDeman was expected to be present and give us an address. This subject will come before us for discussion.

The experimental shipments of fruit to Great Britain, undertaken by the Department of Agriculture for Canada, have been continued and shipments on somewhat similar lines have been conducted by the Ontario Department of Agriculture. This subject will be fully reported upon by Mr. Woolverton. We hope that the Department of Agriculture for Ontario will make such provision for the encouragement of our export trade in tender fruits as shall enable a company of fruit growers in any locality, wishing to make regular shipments of at least one carload each week during the fruit season, to have such conveniences of local storage and refrigerator car transportation to seaboard, and steamship space furnished them, as shall enable them to carry out their wishes.

We have tried to attract the attention of the British public with pictures of snow scenes, ice palaces, etc., until Kipling, the uncrowned laureate of the Empire, gives us the sobriquet of "Our Lady of the Snows." Now we have turned right about face. Let us have no more winter scenes. When Joshua would know of The Promised Land, he commanded the spies to "bring of the fruits of the land." We have, I believe, at last adopted the proper plan to represent our country in its proper light in the motherland,

and at the same time open an almost unlimited market for our surplus production of tender fruits. Our object now as fruit growers should be to produce perfect fruit. It is not quantity but quality that pays. It is the high grade fruit which alone can be relied upon to give us a high standing in either the home or foreign markets, and with such fruit we need never fear a glut. To accomplish this we must cultivate thoroughly, feed liberally, prune closely and thin severely. There is a great lack of knowledge along these lines, notwithstanding all that this and other societies have done. The experimental fruit stations throughout the province are doing valuable work, but their work is necessarily limited. In this way the best results cannot be secured. Fruit growers will never be satisfied until a central experimental fruit farm is established in one of the best fruit districts of Ontario.

The Ontario Fruit Growers' Association, together with the affiliated horticultural societies, is the largest horticultural association in the world. Through its membership and affiliated societies, it aims to be in touch with every fruit grower in Ontario. There are now forty-eight of these affiliated societies, and every year the number is being increased through the agency of Mr. Thos. Beall, our organizing director of affiliated societies. Only during the past month six new societies have been formed in affiliation with us, viz., at Ingersoll, Markham, Waterdown, Cayuga, Perth and Almonte, and the names will be added to our list for 1901.

An important feature of our work, and one that costs us more money each year, is the sending of lecturers to address the societies upon flower or fruit topics. The following lecturers have been sent out during the past year, and by their work the whole forty-eight societies were visited and thus kept in close touch with us, viz., Prof. Macoun and Prof. Fletcher of Ottawa, Wm. Bacon of Orillia, M. Burrell of St. Catharines, and T. H. Race of Mitchell, the first two without cost to us. The engaging of lecturers, the details of making up their engagements with the various societies, arranging the routes of travel and advertising their coming to each society, is a great increase of work for the office of our secretary, while the expense for paying the lecturer for his time and his travelling expenses is now becoming a large item in our yearly expenditure.

If this work of sending our horticultural experts to lecture before our societies is to be continued we must certainly approach the Legislature with a request for an increased grant, a request which we are confident would be viewed most favorably by the Minister of Agriculture.

The Canadian Horticulturist, our official organ, once a small sixteen-page monthly, is now a forty-eight-page magazine, ably edited, splendidly printed and elegantly illustrated. It is distributed monthly to each of our 5,000 members. It is being quite extensively quoted by British and other foreign horticultural journals, and in some cases whole page articles have been reproduced.

The development of the past decade in fruit growing, the largely increased consumption of fruit in our own country and the opening up of foreign markets show us that the possibilities of future development are practically unlimited.

It is our sad duty to record the death of Mr. Charles E. Woolverton, father of our secretary, and one of our constituent members, who died at his home in Grimsby on the 16th of September at the advanced age of eighty years. He was always a regular attendant of our meetings in the early days of Arnold, Leslie, Burnett, Mills, Holton and others; and in his later years of quiet home life and constant reading, he was always in close touch with nature and with nature's God.

Only two of the gentlemen who assisted to organize this Association in 1859 still remain, viz., Mr. D. W. Beadle, of Toronto, and Mr. A. M. Smith, of St. Catharines. I would recommend that these two gentlemen, who have been so intimately associated with the whole history of our Association, be made honorary members of our association.

As the new century draws on us we stand upon its threshold full of faith, hope and confidence in our country, in our Association, and in our work as fruit growers.

Mr. E. D. SMITH: Mr. President, I am sure we have all been delighted and pleased with your practical address. There is one suggestion on which we should take action, that is in regard to the experiment station in the fruit district. It was brought to my mind by the discussion that occurred to-day in regard to what is being done at the Central Experimental Farm at Ottawa. It was very interesting, indeed, to nurserymen to know what kind of fruits are hardy at Ottawa and the northern section of the Prov-

ince, and in the Dominion almost all necessarily there, so the Dominion fruit district

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ince, and it is no doubt equally interesting to apple growers in the northern sections of the Dominion; but for the great bulk of the fruit growers of Ontario, who produce almost all the fruit, tender fruits especially, the experiments conducted at Ottawa are necessarily of little use in regard to the varieties of fruits that are successfully grown there, so that it seems to me that we as an association ought to press strongly upon the Dominion Government the necessity of having a large experimental fruit farm in the fruit district of the Province of Ontario.

The SECRETARY: There is another point in the address which should not be passed over, I think, without being voted upon, and that was the recommendation that this association confer honorary life membership on the two now living constituent members of this association, viz., D. W. Beadle, Toronto, and A. M. Smith, St. Catharines—(Hear, hear)—and I would now move that we elect them to that position.

The motion was carried unanimously amid applause.

A. M. SMITH: I am sure I am very grateful for this action that has just been taken, and when I look back upon the early days of the association, and remember the trials and difficulties that we had in the beginning, and look around again at the present, and see the work that we have accomplished, it gives me still greater satisfaction to think that I have been even a humble instrument in forwarding this great industry, and I am sure as long as I live I shall ever take an interest in the work of the association, and I thank you very cordially for the vote giving me a life membership. (Applause.)

Mr. MORDEN (Welland): I attended those early meetings of the association, not the first one, however, and those names that have been given to-night of the early members are very familiar ones to me.

REPORT ON THE EXPORT OF TENDER FRUITS.

BY L. WOOLVERTON, GRIMSBY, ONT.

This object has been before the Ontario Fruit Growers' Association for some years past, and the writer, being secretary of this association and of the fruit experiment stations of Ontario, has been asked to act in this particular for the extension of our fruit markets. On referring the matter to the Minister of Agriculture for Ontario, he expressed his willingness to aid us in every way possible. The export of peaches, pears and grapes being more vital to Ontario than to any other Province, it was natural that our Province should now exert herself in her own interests, and carry to a successful issue the work so well begun in an experimental way by the Dominion.

Last year the writer was commissioned by the Hon. John Dryden to forward a few hundred cases of Ontario grown grapes to Manchester, to test the English market for our best varieties. The varieties selected were the Red Rogers. They were packed in five pound veneer baskets, four in a case. As reported in our Fruit Experiment Station report, they were received in Manchester with great suspicion, and at first no one would purchase them at any price, but by and by the costers bought them gingerly and began selling them on the streets. Then they came and paid double the price for the remainder of the stock, and our consignees, Messrs. B. W. Potter & Co., said that, if we could have continued the shipments regularly with each succeeding steamer, they could soon work up a trade for Canadian grapes at a probable paying price.

This season Mr. Dryden extended the experiment to include other fruits, and fitted up the "Trader" of the Manchester Line with a cold storage compartment especially adapted for carrying fruits; he also fitted up a refrigerator car, after Hanrahan's patent, for the especial purpose of carrying fruit in perfect condition from the point of shipment to the steamer.

The first Trader shipment made was chiefly Red Astracan and Duchess apples, and was forwarded on the 25th of August. The following fruit growers united in making up the shipment, at their own risk, viz.: L. Woolverton, A. H. Pettit, E. J. Woolverton, W. H. Nelles, C. W. Van Duzer and S. M. Culp. In order to secure the cold storage space of 1600 cubic feet, it was necessary for us to combine and agree to fill it every time the Trader sailed. The apples were graded to uniform sizes and packed in half

bushel cases. They arrived in Manchester in fine condition which proves how complete a success Hanrahan's system of refrigeration is, for the Astracan ripens in ordinary conditions a few days after it is picked. Owing to the great crop of early apples in Great Britain, these perishable apples sold at 60 cents a case.

There were also some bushel cases of apples which sold for \$1.40 each, and some Wilson cases with fillers which sold for 96 cents each. One Wilson case containing one hundred Hales peaches sold for \$1.46.

The following is a summary of account sales of fruit export shipments, 1900.

FIRST SHIPMENT, "TRADER," AUGUST 25.

1 case peaches	6s.	\$ 1 46
67 half-bushel cases of pears.....	4s.	65 26
413 " " apples.....	2s. 6d.	251 41
10 bushel cases apples	6s.	14 61
109 Wilson cases apples.....	4s.	106 17
		<hr/>
		\$438 91
Expenses.....		290 01
		<hr/>
Net proceeds		\$148 90

SECOND SHIPMENT, "COMMERCE," SEPTEMBER 15.

1 case tomatoes.....		\$ 0 61
496 cases Bartlett pears, averaging 74c—\$1.95.....		464 13
56 cases apples, averaging 97c—\$1.25.....		62 82
5 cases peaches		13 39
A. H. P. :		
65 cases pears		59 13
25 cases apples		14 32
11 cases peaches		22 40
E. J. W. :		
118 cases pears		122 74
B. B. :		
110 cases pears		93 50
		<hr/>
		\$853 04
Charges		365 39
		<hr/>
Net proceeds		\$487 65

This shipment was in the nick of time for Bartlett pears, and gave most satisfactory returns. The "Commerce" was fitted up with an adaptation of Hanrahan's system, and the temperature kept within certain specified limits of temperature.

These were all sent at the risk of the growers.

THIRD SHIPMENT, "TRADER," OCTOBER 5.

757 cases pears		\$718 69
44 cases apples.....		68 20
133 cases and crates grapes.....		104 77
32 cases peaches		24 00
		<hr/>
		\$915 66
Charges		461 24
		<hr/>
Net proceeds		\$454 42

The pears and apples in this shipment were sent forward at the expense of the growers, but since there was almost a certainty that grapes would not bring any profit, the growers could not reasonably be asked to risk them. The Department therefore purchased 133 cases and crates of grapes and assumed the risk of loss.

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FOURTH SHIPMENT, "TRADER," NOVEMBER 20.

	£	s.	d.
4 Cochrane cases apples.....	1	10	
17 Wilson cases apples.....	3	8	
366 Bushel cases apples.....	101	2	2
296 half bushel cases Keiffer pears.....	23	9	6
74 " " Quinces.....	4	19	
64 " " Grapes.....	13	14	
164 " " Grapes.....	5	4	6
	153	7	2
Charges.....	107	3	
Net proceeds.....	46	6	11

This last sailing of the Trader was too late in the season, and the risk was too great to ask shippers to assume upon grapes and pears. Therefore, the Department undertook these fruits, and sent forward 266 cases of Keiffer pears and 228 cases of grapes, upon which latter loss is almost certain until the fruit becomes better known in the British markets. Unfortunately the temperature at Montreal was very low about the 18th of October, at the time of loading and, in the transfer from car to steamer, the grapes and peaches were much damaged by frost. On this account their sale was for a much lower price than it would be otherwise, and the Department had therefore, to lose not only the cost of the fruit and cases, but also a portion of the freight.

The following letter is from Mr. P. Byrne, Government Agent at Liverpool, on this shipment :

"I duly received your letter of the 8th ult. with reference to the fruit shipments. It is certainly very disappointing that the grapes have sold so poorly, but I believe they will eventually do reasonably well, if they can be delivered in good order.

The public here are slow to take up with anything new, but a good step has been taken in impressing them favorably with our grapes. I have had three exhibits of them in Liverpool and a gr. at many people have tasted them and pronounced them excellent. But the important thing is to have them delivered in good condition, and to this end quicker transit seems essential, if not indispensable.

The last shipment by the "Trader," which left Quebec on the 19th November, was discharged on the dock at Manchester on the afternoon of the 5th inst. I inspected it immediately on being landed and found the apples, pears and quinces all sound. But the grapes, though fairly dry and sound generally, were in several instances wet and decayed. Since then I learn that they rapidly deteriorated after being landed and I fear a heavy loss on them is inevitable. The cold storage arrangements seem to have been all right, but the fruit must have been too long picked at the time of shipment."

If we could have the "Trader" with its excellent system of refrigeration sail on the 15th of August, 15th of September and the 15th of October, it could be filled with fruits just in their prime, first with Astracan and Duchess apples, second with Bartlett pears and peaches, and third with fancy Duchess and Anjou pears and Rogers grapes, and that without risk of any loss.

The total proceeds of the first shipment was \$438.91, a satisfactory amount were it not for the unusually heavy charges which are advanced this season about double the usual amount owing to the South African war. The following is a detailed list of charges :— Freight paid Manchester liners, \$227.51 ; Manchester ship canal tolls and wharfage, \$13.96 ; cartage and portorage at docks and re-delivering, \$5 74 ; sampling and taring and clearing, \$2.48 ; marine insurance, \$2.52 ; market portorage, \$11.86 ; brokerage at 5 per cent., \$21.94 ; cable, \$3.90, amounting in all to \$290.01. This left only \$148.90 net, or a little less than we could have got for the same goods at home. However, we had the satisfaction of having our fruit reach the market in the very best condition, and of establishing a reputation for our fruit that will be worth millions to our fruit growers in the immediate future.

The following extracts from letters from the consignees, Messrs. B. W. Potter & Co., Manchester, regarding this shipment will be of general interest :

Manchester, 12th Sept., 1900.

SIR,—The shipment ex Trader landed in capital condition and, if it had not been an extraordinary year, you would have had a very good return ; as it is we have been getting good prices compared to English fruit which has been almost given away. We have not completed sales yet, but hope to wire you directly with the next result. Now we have pleasure to report

on packing. Apples will do very well indeed with wax paper *only*, no moss or shavings, and packed only in bushel cases—half bushel cases will not pay you so well. Pears in paper shavings and packed in halves are best. They took much better than the apples, and we could have disposed of more. The case of peaches arrived in splendid condition, but would not keep, and was sold at once, realizing \$1.46. Buyers do not like packages which they have to return. Some of the cases were packed too tightly and the fruit accordingly bruised. This is a mistake which, we think, might be avoided.

The marking on the cases leaves room for improvement. Everything is done in such a hurry in our market that it is a distinct disadvantage having to examine a case carefully to find out the variety of grade and contents. We would suggest that you use the plain end of the case for mark, variety and grade, simply putting in bold type say

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leaving off all other lettering. You might use different colored ink for pears and apples.

Manchester, 17th Sept., 1900.

SIR,—We cabled you to-day as follows: "Thirty-six Net. pears 97c, Bushels \$1.46, halves 61c, Wilsons 97c, average gross proceeds," which we meant you to understand as thirty-six pounds net balance (the pears bringing 97c, bushel boxes apples \$1.46, half bushel apples 61c, and Wilson patent cases 97c (with box \$1.22) average price. It is a very disappointing return we must admit, but considering the state of the market the price is a good one. We send you the "Shipping Gazette" of the 15th inst., and draw your attention to page 10, from which you will see American apples have been fetching from \$1.22 to \$2.44 per barrel.

The writer was present whilst the steamer "Trader" unloaded, and entered the cold chamber, finding it *perfectly dry*, and he considers that the fruit *could not have been carried better, the new arrangement of the brine pipes being a splendid improvement.*

In nine years out of ten the return for the fruit would have been splendid, and it is most unfortunate that you should have fallen across the tenth year.

Your own fruit, on the whole, carried best, and we think you must have picked it in better condition, especially the pears."

The second shipment was made by the steamer "Commerce," leaving Montreal September 15th, just in the nick of time for Bartlett pears, but too early for Elberta peaches. The fruit was kept in cold storage while the carload was being made up, and carried by the Hanrahan automatic refrigerator car to Montreal, and thence transferred to the cold storage chamber of the "Commerce," which was fitted up with the ordinary cold storage chamber, under the direction of Prof. J. W. Robertson, Dairy Commissioner. There were in all 882 packages, and the total net returns were \$487.67.

Mr. Peter Byrne, Ontario Government Agent at Liverpool, writes concerning this shipment, October 5th, 1900. []

SIR,—The Hon. John Dryden having informed me that you would like to hear from me regarding the condition of your shipment of fruit on the S.S. "Commerce", I am glad to inform you that I found it very good indeed. The fruit was very cold and some of it very "sweaty" when opened, but otherwise it was all right, every case inspected being sound."

The Elberta peaches were rather green and immature looking, and consequently less attractive than the "Crawfords" sent by Messrs. Pettit & Son. Some of these had probably been a little too ripe when picked, as a good many of them were in various stages of decay when opened. Whether the wool used in packing had anything to do with it I could not say. But the majority of Crawfords were in perfect condition and have been much admired for their beautiful and attractive color.

Your case of tomatoes turned out sound but very tender in the skin, and soft. It is well you did not send any considerable quantity, as the market is glutted with "foreigners."

The pears sent by E. J. W. all turned out well. Those shipped by D. J. McK. were to a considerable extent damaged having perhaps been packed over ripe. Messrs. Pettit & Son's lot (two grades) were in about the same condition, a good many in some of the cases being bad, and others being all right. Part were packed with wool and paper and part with paper and shavings. I am inclined to think the wool packing is of doubtful benefit.

I find that some experienced fruit dealers here have no fault to find with the present modes of packing and would suggest no alteration whatever.

Mr. Potter secured the temporary use of a fine show window in Manchester for a display of the fruit; and I have done the same here. I brought from Manchester a Wilson case with carefully selected of pears, apples and peaches, but, finding these were too few to be effective, I got four half cases from Mr. Shuttleworth in Liverpool, who is the consignee of the other shipment ex "Commerce," and with their aid I got a good and effective exhibit for the show window of the C. P. R. offices. It is attracting an immense deal of attention. I invited all the

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Press of the city to come and inspect and taste the peaches which, being a great novelty here, form the most attractive part of the display. The great mass of people here actually think that they are grown under glass and are astonished, if not incredulous, when they learn that they grow in the open like pears, apples, etc.

One of the wholesale salesmen in Manchester entrusted with the disposal of your fruit, told me that he had sold 20 cases of pears in an hour and every one of them was opened and found in prime condition. The price was \$1.22 per half bushel case.

This is a very abundant fruit year in this country and glutted markets have kept the price low. I will send you papers containing press notices of our exhibit. If you are sending any grapes with the next shipment, I intend to make a public display of them also and will urge Potter to do the same in Manchester.

The following letter from Messrs. B. W. Potter & Co., the consignees, is also of interest. It is dated Manchester, October, 1900.

SIR,—The major portion of your "Commerce" shipment has been sold, the Bartlett pears fetching from 97c. to \$1.22 a case, with some wasty one 49c., and a few absolutely worthless. These latter we think must have been against the brine pipes and the temperature has been too cold.

Tomatoes will not pay for sending; they are too cheap here. Your box fetched 61c. The sixteen cases of peaches have sold for \$1.46 to \$3.17 a case, but a very large proportion of the fruit was bad. Details of all marks to follow. The bushel cases of pears are too large and don't sell well.

Peat moss will not do for packing. It does not keep the fruit well and certainly looks badly when cases are opened. Keep to the fine shavings and paper. We enclose sample of paper the Californian pears are wrapped in and they carry splendidly. The wax paper also does well and is good looking.

The peaches seem best packed without wadding. The Elbertas are soundest, but the Crawfords take much better; they are so showy. Some fruit has been picked too green to ripen.

The apples of course came splendidly. Please send in future full details of marks, grade, variety and size of package. We had great difficulty in sorting out on quay. A good consignment arriving a couple of weeks before Xmas would do splendidly we feel sure.

Under date of October 10th, Messrs. Potter & Co. write.

SIR,—“We cabled you to-day, 'Net 105.' This is the approximate net proceeds of the 882 packages landed. The charges have not all come in yet, but we do not think the actual result will vary much from this figure.

We are sorry the result does not equal the 97c. You wanted to make the shipment pay, but you have certainly made more by this fruit than any other people in the market. More than this, you have given the fruit a good standing and the public like it and will ask for it again, so that the result cannot be measured merely by the cash return.”

The following is from the *Journal of Commerce*, Liverpool, dated October 8, 1900:

“The enterprise of our Canadian cousins has for many years been a factor of considerable importance in regard to the trade of this country, for Canada has year by year been sending supplies of various kinds in ever-increasing quantities. For some years past attempts have been made by Canadian fruit growers to find a market for their surplus produce on this side of the Atlantic, their efforts meeting with varying success, but at last there is reasons to think the time has come when Canadian grown fruit will compete on exceedingly favorable terms with the home grown article, and this not only in the hardier class, but also in fruits of the most delicate description. When the earlier shipments of fruit were made a few years ago the result was almost sufficient to give the project a death-blow, for the conditions under which the produce was carried were not at all such as to improve the fruit during its passage across the Atlantic. The butter man of Montreal required a temperature of twenty-two degrees for his produce, the beef exporter wanted twenty-eight degrees, the fruit could not do with anything under thirty-six degrees nor much above forty degrees. Consequently, when all these classes of goods were placed in the same cold chamber on board the steamer, some portion of the consignments had to suffer, and the fruit fared the worst of the lot, for when it was opened on this side and exposed to the warm air of this country, the tissues of the fruit burst and it wasted away within twenty-four hours, the experiment thus ending in failure. The matter was reported to the Canadian authorities, and after some further experiments, through the efforts of the Hon. Sydney Fisher, the Dominion Minister of Agriculture, shipments were made in steamers which provided the temperature requisite for the proper carrying of fruit, the produce being carried in a special chamber cooled by the Linde system. The improvements have, of course, been gradual, and success came very slowly, but it is thought now that the general principles under which fruit can be carried to the best advantage are pretty well known, and that only in minor details can the system be improved. One of the important points connected with the carriage of this class of produce is the necessity for keeping it at a temperature which, while sufficiently low, is not

allowed to vary to any extent. Considerable difficulty has been experienced on this point, for the best-meaning engineer may temporarily neglect this portion of his charge, and the mischief is done, in most cases beyond repair. A thermograph or self-registering thermometer, is now provided for each chamber fitted for the carriage of fruit, and this provided a record of the actual changes of temperature during the voyage: thus it can be seen at a glance whether the fruit has been carried under proper conditions or not.

A recent shipment of fruit by the Manchester Commerce arrived in this country in the pink of condition, and samples have for the past week been exhibited at the office of Canadian Pacific Railway, James st. There passers-by were astonished to read that all the fruit exhibited, which included some of the finest peaches imaginable, was grown in the open air. One fancies the Canadian climate to be more or less like a severe Christmas in this country, but during the summer season the land is a veritable garden, where flowers and fruit which it is only possible to produce in hothouses in this country are to be found in every garden. The fruit sent by the Manchester Commerce is grown at Grimsby, Niagara District, Ontario, a place famous for its orchards and vineyards; and here every description of fruit, including the finest Williams and other varieties of pears, and many kinds of peaches, are grown in the open air. Those on view at the offices of the C. P. R. in James street were a continual source of attraction to passers-by, and some were so carried away by the exceptional appearance of the fruit as to be induced to enter and attempt to purchase what were only exhibited as samples. In Canada the fruit is carefully picked, the peaches when almost ripe the pears and apples somewhat earlier, and as carefully packed, being forwarded by rail to the port of shipment in refrigerator cars. These cars are specially fitted for the purpose, and, being properly attended to, the fruit is carried through to the steamer in excellent condition. Olate, owing to the splendid arrangements made on most of the newer boats crossing the Atlantic, the carriage to the this country has been perfect satisfactory, and the result is that the Canadian growers have been able to put their fruit in the English market in perfect condition. It has been well in demand wherever offered, and has been sold at prices which equal, when they do not exceed those paid for the more hardy, but less juicy and delicious, fruit from California. Orders have already been received for large quantities of Canadian fruit, which is only being shipped. This includes some consignments of Canadian grapes, which will be put on the market in the course of next two or three weeks."

Shipment No. 3 was by the steamer "Trader" again, sailing October, 5th, but this was too late a date for peaches or Bartlett pears, both of which were in season for the previous shipment of September 15th. Added to this the ice at the Grimsby storage gave out, and the weather came exceedingly warm while we were packing. Under these unfavorable conditions we thought best to send forward only about sixty cases of peaches, which arrived in Manchester quite over ripe, and the same was the case with the few Bartlett pears, but the principal part of the shipment consisted of fall apples, such as Ribston, Fall Pippin, Blenheim and King, which sold at from \$1.50 to \$1.75 per bushel box; and of such pears as Duchess, Louise, and Sheldon which also arrived in fine condition and sold well.

There were also some red and black Rogers grapes, about two tons, sent forward in the storage chamber. These arrived in fine condition, but, as usual, failed to bring paying prices.

Mr. P. Byrne, Ontario Government Agent, writes to the Department of Agriculture at Toronto, on the 24th of October, as follows:

"The grapes, speaking generally, were in very good condition. An occasional sample was slightly wet or mouldy, but on the whole, they looked attractive and sound.

The pears were generally good also; I assisted in preparing and arranging an exhibit of the fruit at Manchester and brought with me selected samples for a display in Liverpool similar to the one which was so successful in connection with the shipment brought by the Manchester Commerce. The samples I am showing consist of a tray of 25 very fine Elberta peaches, also two cases of red and black Rogers grapes, two cases of pears and one case of apples. They make a very handsome and affective display and constitute a most valuable object lesson as to what our Province is capable of producing. I sent notices to the press announcing the exhibit, and the consequence is continuous crowds as before inspecting and admiring the fruit."

Messrs. B. W. Potter & Co., the consignees, write on the 27th of October, as follows concerning this third shipment:

"We have now the pleasure to report upon shipment per Manchester Trader of grapes, pears, apples and peaches. The latter were nearly all spoiled, and we should say that they were packed to ripe. Besides this we see the Wilson cases are not ventilated at all. Kindly examine them and you will see that this is correct. It must have a serious affect upon the fruit.

The Duchess pears have carried splendidly and taken much the best with buyers, prices varying from 75c to \$1.40 per case. The Louise turned out very wasty, but the White Doyenne

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and Anjou were mostly sound. The Bartletts were almost wholly rotten and we should judge had been picked at the wrong time, or stood before being placed in store. The prices will give you a good idea of the public taste.

All the apples were in excellent condition, the Ribstons fetching the best price, \$1.71; with Blenheims and Kings, \$1.58, and Fall Pippins, \$1.46. We could have disposed of any quantity of these fruits.

The grapes arrived in very much better condition than last year, there being hardly a bad case. We think the boxes with four baskets of five pounds each is the better package, and, as we have said before, the black Rogers will always sell the best. With a little perseverance these grapes should be a success, but we want a steady supply for the few weeks the season lasts."

Whether our grapes will ever become popular enough in England to make it profitable to export them, seems a question. At first the dealers would not buy them at all, and our consignees had to persuade the costers to take them out on the streets for sale, but by and bye they commanded a small price, which is slowly creeping upwards. But, even yet, the price is not equal to the value of these grapes in Ottawa or Montreal. A report of the sale of 3,360 four pound baskets of red and black Rogers carried over in a ventilated compartment, and sold in Manchester the 23rd of October, shows that they sold at about five and six cents for a four-pound package, the beautiful little baskets with covers and wire handles, costing without the fruit about three cents each; the price, therefore, leaves only about one cent per pound for our very best Rogers grapes, which are worth from two to three cents a pound in our own vineyards

We would think from this shipment on the "Commerce" that we would never be able to export our grapes with profit. A shipment, however, of thirty-nine 50 lb. crates, each containing twelve little 4 lb. baskets of Rogers, either red or black, and ninety-four 20 lb. cases, each containing four 5 lb. baskets, as shown in our illustration, and forwarded October 5th in Mr. Dryden's compartment on the "Trader," to Messrs. B. W. Potter & Co., Manchester, brought much more encouraging results, and our consignees write that, if we could continue regular shipments weekly, and not too many at one time, they think they could gradually work up the price to a paying basis.

The following is our account sales of grapes in the third shipment. The varieties were mostly Lindley and Wilder, and were grown by N. Keep, Winona, J. A. Pettit and L. Woolverton, Grimshy.

7 cases at 1/10	.....	\$ 3 12
54 " 2/	.....	26 30
11 " 2/3	.....	6 02
9 " 3/3	.....	7 12
13 " 3/3	.....	10 29
24 crates 5/	.....	29 22
13 " 5/6	.....	17 41
2 " 10/	.....	4 87
		\$104 35

CHARGES

Freight	.....	72 10
Manchester Canal tolls and quay charges	.....	3 33
Carriage, portorage, warehousing, sampling and taring, clearing and forwarding, warehouse rent, fire insurance	.....	10 00
Brokerage at 5 per cent	.....	5 21
		90 64
		\$13 71

The following is a general summary of gross sales and charges for the whole cargo, the latter of which are altogether too high and must be reduced in future, if the trade is to prosper:—

757 cases pears	\$718 69
41 " apples	68 30
133 " and crates grapes	104 36
52 " peaches	24 77
		\$916 12

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CHARGES.

Freight	351	73
Manchester Canal tolls, quay charges	35	50
Cartage and portorage at docks and warehousing	12	97
Clearing and forwarding, sampling and taring	3	81
Warehouse rent	5	66
Fire insurance, Marine	7	51
Portorage at market	11	51
Printing	6	02
Brokerage at 5 per cent	45	80
Cable		73
		461 24
		\$454 88

The graded apples sold remarkably well, Ribston Pippins bringing \$1.75, King and Blenheim \$1.58, and Fall Pippins \$1.46.

The pears also did splendidly, except Bartletts, which were a little out of season for the shipment. Duchess sold at from 97c to \$1.40, Bartlett at from 36c to \$1.22, Louise Bonne at from 24c to 91c, White Doyenne at from 85c to 97c, Anjou at from 73c to \$1.15, Howell at 85c, Sheldon at from 61c to 85c, Beurre Clairgean at from 73c to 85c, Lawrence at 97c, Peerless at from 85c to \$1.09.

The peaches were also past season on October 5th, and had to be kept in ice storage a couple of weeks before sailing, consequently they did not carry as well as those sent in the previous shipment. The varieties were Late Crawford, Smock, Willett, Elberta, and they did not pay freight charges. We have confidence, however, in peaches that, if picked firm and sent forward immediately, we can land them in perfect condition, and realize long prices; and the same is true with regard to our tender Bartlett pears.

CONCLUSIONS. On the whole we conclude from this season's experience that, with certain limits of temperature guaranteed to us on shipboard as has been arranged for us this season by the Hon. Sidney Fisher, and with Hanrahan's system of circulation of air we may export pears, summer apples, and even peaches in perfect condition and with perfect confidence. We have already established a fine reputation for our goods in Manchester and, if this trade can be pushed forward, there is no question that a new day of better things will dawn for Canadian fruit growers.

Our pears are especially admired and appreciated in England and we may send forward as many as we like if only properly graded and packed. In evidence of this we quote the following from the "Fruit Grower," of London, England, under date October 4th:—

"The samples of pears were unusually large and fine. The Williams were grand and it is clear that no competitor on the market from any outside centre can touch them, for as far as quality, size, flavor and color are concerned they are as perfect as a market Williams can be. The other varieties are also of prime quality. It is thus evident that at least the whole export business has been put upon a proper basis and that Canadian growers and shippers may rest satisfied with the situation as far as methods of transit are concerned."

And again under date of October 11th:—

"It is worth noting that best pears have met a fairly good sale through the week and that the supplies have, thanks to the Canadian shippers, been well up to the mark. The Canadian Williams (Bartlett) has attracted a good deal of attention in fruit trade circles. Some large specimens have been put on sale and as the skins of the fruit were clean and delicate they met a good reception from buyers in the best fruit shops. We learn that a large quantity of pears are to come across and that in future years the competition in this branch of trade will be very keen. As a matter of fact the pear trade from October till February is excellent and good samples put upon our markets during the former months can always be depended upon to secure good prices. The one difficulty so far as Canada is concerned has been overcome. Now they are in a position to put their fruit on our markets in perfect condition and this is a consideration. So long as the fruit sent is large, of good quality and well graded it will pay. It has taken the colony time to master the initial difficulties that beset its path at the start and it is hoped now that it will be able to develop a profitable business with this country."

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The following extract is from the "Liverpool Mercury," in October :—

" Since mechanical refrigeration was inaugurated on steamers running from Canada to British ports in 1897, many improvements have been made in the grading and packing of fruit until to-day Canadian grown peaches, pears and apples can be landed in this country and placed on the market in as perfect condition as if picked a day or two ago instead of a month. This has been illustrated by a consignment recently received in Manchester. The Hon. John Dryden, Minister of Agriculture for the province of Ontario, is co-operating with the growers in the matter and the Canadian Government are now providing for each chamber fitted for the carriage of fruit, a thermograph, or self-registering thermometer, which shows whether the fruit has been carried under proper conditions or not."

Messrs. W. B. Potter & Co., writing on the 3rd of November regarding the third shipment, say :—

" The grapes have not realized much but the apples and pears should satisfy you, we think. It is unfortunate we had nothing from you by the 'Manchester City' in this week, as prices have been still better and all our friends were anxious for further supplies. The quantity of French pears on the market was much smaller during the week and this helped prices. You will find it to the advantage of all concerned to send regular shipments and not one occasionally.

The Duchess pears have been quite the most successful of any variety. They have carried exceedingly well and stood up afterwards. This is a great advantage and gives buyers confidence to take a quantity. We do not know whether the Bartletts could be picked at the right moment to keep better, but it certainly is their weak point. You will notice the number spoiled this time.

Would it be possible to send a consignment of fruit in cases to land here about ten days before Xmas? We are confident good prices would be realized. The cases would be handy for presents."

Now since the Province of Ontario is more deeply interested than other provinces, in the development of this fruit export trade, we think our Association should urge upon our Provincial Government the great importance of vigorously prosecuting this enterprise until we see public confidence in it established; until the days of glutted home markets for fruit are passed away forever, at least for fruits of the higher grades, and until the prices of these goods at home are established by their advanced export value, instead of their being sacrificed as now on overloaded home markets. Why should our pears, that are worth from 75c. a basket for export, and our peaches that are worth from \$1.00 to \$1.50 for that purpose, be sold here at from 15 to 30 cents? Why, with such possibilities just within our reach should the thing be dropped, and our growers left to struggle along in an industry that, though once profitable, is now becoming unprofitable?

The Dominion Government has kindly opened the door for us, and the Provincial Government has begun to take an interest in us, let us now strongly petition our own province to help us still farther to pursue this enterprise, and not to drop it until it is as firmly established as any of our industries.

I think the wisdom of the committee is needed to consider details, but, in general, I would move that we extend a vote of thanks first to the Minister of Agriculture for the Dominion for his work in providing cold storage on shipboard with guaranteed limits of temperature, and for carrying out our wishes regarding better storage of apples on shipboard; and to the Minister of Agriculture for Ontario for taking so much interest in the fruit industry of our province as to fit up the steamer "Trader" with Hanrahan's patent cold storage, and fitting up one car to connect with the same, and for the experimental shipments sent forward during 1900; at the same time expressing the hope that he will continue to interest himself in this work until it has been established on a trade basis.

I would urge that this trade be developed in all fruit centres by some scheme which would provide for the building of local storage houses at any fruit growing centre where there is a company of fruit growers who would agree to make up a car load each week for export, and meet the required conditions of the cold storage building; that a car be fitted up with Hanrahan's patent to run weekly between each cold storage and the shipboard, and that cold storage space on shipboard be always reserved to meet the requirements of such shippers.

Mr. RICE: Did you wrap the apples up in the Wilson case?

The SECRETARY: We did, but probably the cold air would work better if they were not wrapped, so long as the little compartments were properly filled.

A DELEGATE: What is the cost of the cases?

The SECRETARY : This case has been costing 30 cents complete ; I have a letter from the firm saying they expect to be able to furnish them next year for 20 cents. It is proposed to make them a little larger and to hold 144 apples. I think for peaches it is the best package we can adopt, whether it is the best for apples is another question. I bought a whole carload of that peat moss thinking it was the best material for packing and certainly it was the cheapest, but you see the reports upon it are not favourable. The excelsior seems to be more pleasing to the English buyers.

Mr. MCKINNON : Was the peat moss quite dry when it was used ?

The SECRETARY : Some of it was and some of it was not perfectly dry.

Hon. JOHN DRYDEN : It was dirty.

The SECRETARY : It does not open up clean like the excelsior, and I think that is one of the objections to it.

Hon. Mr. DRYDEN : I heard some complaint against the packing of the boxes in the compartment ; I think some attention must be paid in future to that.

The report was received with applause.

ADDRESS BY HON. JOHN DRYDEN,

MINISTER OF AGRICULTURE FOR ONTARIO.

I think I am warranted in saying that among all the branches of agriculture in this Province, there is none of greater interest to our people or of greater importance than the one which this Association represents. We have discovered in recent years that we can hold our ground in any country with our exhibit of fruit. We went to Chicago. Our friends to the south never expected much from Canada in this direction, and I think I am right in saying that we astonished them not only by the exhibit there presented but by the number of prizes which we won in open competition with them on that occasion. You have heard from Dr. Saunders the result of our exhibit in Paris. You have heard of the special prizes won there, and I believe that if we have a fairly good season in 1901 we shall do equally well in the exhibit we are attempting to put up in Buffalo. We have discovered also that it is not merely in a few places in the Province that we can grow fruit. Some of us used to think it was so. I had my eyes opened some years ago when I was a member of what was called the Agricultural Commission, and when we discovered that all along these lakes, covering the major portion of our territory in the Province of Ontario, we had a splendid fruit district. But then as we have come along during these years we have had a good many things to learn. I am speaking now not of the experts that I see here before me, but I am speaking of the fruit growers generally, because our farmers all over the country are more or less fruit growers. We have had to learn, shall I say, the impossibility of handling the fruit tree as you would handle the forest tree. I know farmers who seemed to think that if they planted the fruit tree and got it started it would develop for itself, and not only so but that on the same ground they could produce a continuous crop year after year, and all that they got out of the tree was so much extra. Now, all that has passed away, and I apprehend that there are not very many men in the country now who do not understand that that is practically an impossibility—that you cannot take out of the soil what is necessary to produce good apples in an orchard and try to take out a crop every year, and keep at that without giving back to the soil something of what you have taken out, without something coming to a dead failure. I have seen, and you have seen, instances of just such failure as that. Then we have had to learn the necessity of paying constant and continued attention to the fruit tree from the beginning—attention so far as pruning is concerned, latterly attention as far as spraying is concerned. I remember a few years ago a great many of our farmers thought that some of us were providing ways and means to induce them to spend their money over some new fad when we suggested that it was necessary, if they would do the best for themselves, that they should commence to spray their trees. Now we have got past that stage, and all our people are practically admitting

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now that if they will do the best for themselves they must attend to these things. Then we have discovered that fruits suitable for one section of the country may not be equally suitable for another section, and in order to help us in that matter, the Government has established those experimental stations of which you have heard. We have 10 of them now. We have not reaped much result as yet; no one expected we should; but those who come after, who years hence will look at the record that is made, will I think have something which may be tolerably certain, indicating what will suit best for the particular district which these experimental stations represent. Then another thing we have learned is that we are being attacked year after year by new enemies which are making their appearance, and those enemies in the way of insect pests must be fought intelligently and unitedly. It is very little use for me or for one or two of you gentlemen to try to fight these pests with everybody else paying no attention to them, because they don't stop in the orchard where they start. They come over to see you as well, and therefore it becomes necessary that we should present an unbroken front if we are to the best for ourselves in this regard. Now, in reference to these pests you need law. You gentlemen have not hesitated to ask me as head of the Department of Agriculture to give you law. Will you let me suggest that I think at the present day there are some of us who place too much importance on the fact that you have law. I have seen temperance reformers and other kinds of reformers who seem to have one single idea, and that was, "Let us get some law on the Statute book, and then we can go home and go to sleep quietly, everything will be all right." (Laughter.) Now, law is necessary, but I point out to you that law is not all; that law is only enforced when it has back of it a public opinion; and that if you work to put a law on the statute book and your people are not in accord with it, and they resent it, then I undertake to say to you that your law is of very little use. When a man comes to me and says, "All I want is law; give me a statute that I can read once in a while, and I will be content," that man does not understand the situation. Now, you cannot drive people generally, and you cannot drive farmers especially. (Hear, hear and laughter.) I do not know a worse body of human beings anywhere in the world to undertake to drive or force to go in a certain direction than the people we call farmers in this country. They live in their isolation and in their independence on their farms, they whistle when they like, they yell when they like, they run when they like, they are not under control like our city brethren. I would be a very strange thing to see me start down Yonge Street on a full run; everybody would wonder what would happen, and I would have a policeman after me; but you gentlemen on your farms are used to this sort of independence, and you do not like criticism; you resent it more than anybody else. When I was down in the Maritime Provinces we were talking about swine, and I suggested that perhaps some of them had undertaken to drive a herd of swine into a pea-field in order that they might be fed, and because they were just a little bit anxious to hurry them through, there arose a little commotion and they whirled around and, instead of going the right way, they went the wrong way, and the chances are they did some injury to your limbs. Now, if you could have pulled a few vines through below the gate and let them get a sight of it and a scent of it, and let them take the trouble to reach through and get some, you would have coaxed them through without any trouble. I am not going to say that men are like swine—(laughter)—but there is some little resemblance. Let a farmer get a scent of the advantage that will come to him by any certain course and he will walk in himself. When I started the travelling dairy, which had for its intention two things—the education of our farmers and our farmers' wives in their homes as to the manufacture of butter, and the increased interest which we expected would come because of the agitation which the travelling dairy would bring to the people, which would finally lead them to the place we wanted them—it was suggested to me that in that we were leading them in the wrong direction, that what was wanted was that our farmers should club together in a factory. My answer was, "This is the road to the factory." The first point was to have the farmer's wife see that she secured an advantage by producing a better article at home. The very next step is that they will get together and see that if they club together in a factory they will get a still further advantage, and the direct result of it was just that, and there never was a time in the history of our country when our factories increased so much as they did just immediately after the education given by the travelling dairy. So you see if you just show the way, even if there is

a gate there that they have to unhinge, they will get it off and they will follow you ; but if you undertake to say, " I will make you go, and I will take the lash and drive you," you will never get them at all. Now, that is perfectly true, I think, so that while some law is necessary, law is not enough of itself, and we must form public opinion as to the necessity of the law. Now, one of the worst insect pests you have ever had in this country is this San José scale, of which mention has been made here to-night. Being at the head of this Department, I was compelled to study in connection with it, and I think possibly I know more about it, and I think I feel stronger about it, than most of you do. I shall not live ten years longer—I shall not live five longer probably—before I find those people who were resenting, shall I say, our compulsion of law, I shall hear them saying, " He was right, and I was wrong."

A VOICE: They are saying it to-day.

HON. JOHN DRYDEN: I do not take back one single thing that I suggested in connection with that scale. I believe that it is a terrible pest, and I believe that it will spread and spread unless we get something more than we have had yet, until it will do incalculable injury to this country. These reporters know that for a year or so I kept them quiet, and said, " Do not say anything about the scale, do not get them in the reports for fear the report will get abroad and our English friends will say, ' They have got the scale in Canada and we will not let them come in.' " That is the one thing that troubled me more than anything else. I said, " It is sensational, but you can wait a while," and they did, and they acted like gentlemen, and had nothing to say about it. But, of course, it is now an open secret, and we cannot hide it. Now, I took rather a bold stand. I undertook to spend a lot of the public money, and the thought was that by spending that money, \$100,000, it might be, we would quite stamp it out. I tell you I should be the proudest man in the country to-day if I had succeeded in stamping it out with even twice that sum. (Hear, hear!) But of course our Legislature is divided into parties, and you cannot hinder partisans from taking advantage even of the course you take in a matter like this, and so we had all sorts of criticisms,—people standing up in the Legislature and saying, " The Minister of Agriculture does not know what he is talking about, he is afraid of a little scale ; he cannot see it ; you can hardly find it with a microscope ; it has been here for years, it has not done any harm, it is not likely to do any harm," and all that kind of thing. And the result was that the public opinion in the part of the country where we were laboring rose so strong that you know what happened—deputation after deputation came down to the Government with the complaint that they did, because their property was being destroyed, and said, " This must stop." We did not stop it until we discovered that the scale was perhaps spreading faster than our inspectors were, and found it still beyond and still beyond and still beyond. I said to my inspectors, " Where is the outside limit of this? Find out for me now the next three months where the outside limit is till I know where I stand," and so we put on more men and tried to circle it round, and I found in that time in that one district it would probably cost \$300,000 at the rate we were going, and even then I would not know that I had it stamped out. The Legislature would not vote that money with public opinion as it was, and the result was we had to drop it, reluctantly drop it, and where the scale now is it is likely to exist for some time. The only thing now that we could suggest was we should try to keep it in the section where it then existed, that is to say, do what we could to prevent it spreading. It is fair for me to say, however, that the money we voted and that we spent was not all lost. Would you believe me if I were to say that we absolutely destroyed the scale in at least one hundred places in this country? Now, the greatest danger so far as the scale is concerned is that it gets into the nurseries and from the nurseries it is transported into the different portions of the Province and planted here and there, and you see how quickly in that way it will spread over the whole country. Now, if we could keep it out of the nurseries, at all events, prevent nurseries from spreading it about the country, we may hold it where we have it to-day, and undertake to check it as best we can by the sort of treatment which we have recommended. I must say that our chief nurserymen have stood at the back of the Department in a noble way. I have had the greatest amount of encouragement and help from our chief nurserymen, but there are some small nurserymen who do just as I have said a little while ago, and who say, " You want to compel us to fumigate our stock ; we do not believe there is anything in your fumigation ; it is a great humbug and a great cost and a great

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hindrance to us in our work, and therefore we do not want to do it." Now I have insisted as head of the Department that the law in that matter shall be carried out. I believe I will be backed up by the highest nurserymen and by this association, to get public opinion roused sufficiently so that any of those people who think they are imposed upon will cease their objection and will heartily carry out the law so far as they are concerned. Now the effort to keep it in check is by treatment. My thought is this, that no treatment yet in any country has absolutely killed the scale. The gentlemen who are making the pumps have provided us with machinery which is pretty near perfection, I fancy, for the purpose that we want, and we will probably be able to use these; but the difficulty is in the actual performance itself. A man must be mighty careful if he can cover every inch on a tree, and if he leaves one square inch, if he leaves one scale there, the little creature is so productive that it will set going a few more broods in a year and away you go again. You see that is the difficulty. However, I do not see any other way that we can meet the difficulty than continue our operations in that way. I shall be very glad before the association adjourns to hear what you gentlemen have to say in reference to it. Now, let me say that the possibilities of this industry in this country, in this Province of ours, are simply immense. There is not a country that could not in a few years double its product. (Hear, Hear!) You heard what Dr. Saunders told us this afternoon, that there is room in the Old Land for ten times the amount that we are producing in this country. But then you say, "That market is so far away, thousands of miles away across the sea;" and I want to say right here that the individual producer is absolutely helpless under these circumstances, and I defy any of you gentlemen to undertake to work out your own salvation in reference to this transportation unless you get help. It cannot be done. (Applause). So that this is one of those positions in which it becomes necessary for the gentlemen who are in control in our country to come to our rescue and relief. There is need of better transportation facilities. The product is perishable, and it must be handled at once at the right time, and so it becomes necessary that special provisions should be made for getting it across this great ocean. Now the only thing we have discovered yet is this cold storage about which so much has been said, and you gentlemen who are fruit growers ought to understand two things: First its importance in connection with this industry. One of my colleagues will be here to-morrow and talk to you a little more about this cold storage and its principles, but its importance cannot be over estimated. You cannot get on, you cannot make progress, you cannot double up your product as you ought to do in this country without this cold storage, therefore it is one of the important things that we have got to deal with. Then secondly you want to understand its principles. Now, we think there are two principles in connection with cold storage. Possibly the Ontario Government has done a little by conference with the Dominion Government in this regard, because the cold storage compartment that we have placed upon the Steamship Trader has an additional principle—the necessity of a lower temperature than would ordinarily be found on the ship, but in addition to that there should be a constant circulation of air and not an absolute stagnation. Let me just in a word explain what I mean. You all know that if the air is warmer here than it is outside, and you let down that window at the top, cold air will come in at the top of the window and come right down to the floor and begin to move off in the room. You can try that any time and find that is the case. Now we use that principle, and we put the pipes in such a place in the compartment as to start the air going down, which of course begins a circulation of warm air taking its place, and therefore the air being circulated that way coming from the fruit, bringing away the dampness, the gases and so on, it is brought around in contact with the refrigerator pipe again and purified and kept dry. The moisture is taken on the pipes, just the same as the moisture would be taken on a glass of cold water on a hot summer day. Now, you heard what Mr. Woolverton said about the two shipments, but possibly you would not have observed it as closely as I did, because I am watching the effect of this principle. On the Manchester Commerce, where this Hanrahan system of circulation was not as perfect as it was on the Trader, you heard the report, which read, "A good deal of the fruit was cold and sweaty," whereas the report regarding the Trader said, "The fruit came out of it in a perfectly dry condition." That is exactly what I would expect; and if any one of you gentlemen have a cold storage plant or a refrigerator of any kind on your premises where everything is all damp and moist all the time, your refrigerator is not working right and

you had better send for Mr. Hanrahan or somebody else to put it in order. We have had two or three of these refrigerator systems in connection with our institutions this very summer put in order, and the change is marvellous. At the Parliament Buildings we have one of those paper wind-mills that the children use, showing the circulating system, and you would be surprised to see the circulation buzzing around at a great rate as though there was a wind storm. That is the principle we should carry out if we are going to convey the fruit across the ocean in a proper condition. We have labored under a great many difficulties with our experiments this season, because we only had one what we considered proper compartment. We had absolute control of the one Mr. Woolverton has been speaking about, but the difficulty that we have experienced is that the fruit required to be held too long before we started. Now, if you are going to do your best, so far as cold storage is concerned, you must understand this, that you have got to have a cold storage building at the beginning, and you must not let your fruit, which is to be shipped to the old country, stand around the stations, or your own barns or buildings and bring it into the cold storage and expect it is going to go all right. If it has begun to decay no cold storage on earth will put in condition again; so that to think that cold storage will make unsound fruit sound is a mistake. The moment you take it from the vine or tree let it be placed in a building, and let it get out of that building into a cold storage car, and out of that into a cold storage compartment, and when it gets to the other side into another cold storage compartment, and keep it in if you are going to make a success of it. We have had considerable experience, and so far as I am personally concerned I confess to you I have had an exceedingly large amount of labor and anxiety all summer, and if I had known in the beginning that I was to meet with so many difficulties and obstacles I am afraid that none of the officers nor anybody else would have induced me to tackle it; but I understand that Prof. Robertson had declared that in his judgement grapes could not be taken over profitably nor peaches—they had never gone over successfully and the people did not seem to want them, and they would therefore drop it. On that account I said to Mr. Woolverton—of course he was pressing his case, as you have heard to night—"If that is the case I am willing to help you if I can." My theory is this: if you can hold your fruit in cold storage on the land you can hold it on the sea if you have the proper appliances. Now, I may be all wrong in that, but I do not believe I am. I think I am right, and therefore I say that somebody in this country ought to provide for the fruit growers of this country cold storage on the sea just as we have it on the land, and when you have got that, you have got something that is definite and certain, and so on that account we undertook it. A gentleman will ask, "Can our peaches be taken over?" I think our experience this year proves that peaches can be taken over in perfectly good condition. I think Dr. Saunders will bear me out in that. I want to say in Dr. Saunders' presence that we have not had a fair trial of it yet. We do not want cold storage just in one boat sailing every three weeks or four; we want cold storage boats leaving every week.—(hear, hear.)—so that when fruit is ready we know where to put it in. That was my intention. I intended to ask that we should be allowed to partition off a part of the cold storage compartments in each of those ships under the control of the Dominion Government, so that we could put in a carload at all events and try it under this system where we had a circulation of air, because every system had failed to some extent in the past, and we thought we could succeed in that way. But I found I could not succeed; I could not get the compartments. The compartment was in use; it was occupied. The steamship people fought me, and other people fought me whose names I need not mention here. I am not accustomed to be beat—(laughter); when I see my end to work for I am inclined to go ahead if I think I am right, and it does not make any difference where the opposition comes from. So I astonished Mr. Hanrahan by working out a scheme which enabled us to build at our own expense a compartment on the steamship *Trader*, and we have that compartment under our control, only we are trying to arrange with the steamship company to give us part of the money back again that it cost, and leave the compartment on the ship, which I have no doubt they will do. We have that, but it only comes once in three or four weeks, therefore peaches that ought to be sent at the right time are held here for two or three weeks, and as you heard from Mr. Woolverton, the ice gave out, and the cold storage up there, just in the heaviest season, was *nil*, and the peaches were starting to rot, and yet we were trying to make a success of it on this compartment that

we built simply that Ha cold stor is not a want it we have for the g will not didn't li long. I to learn. he keep wicked p grapes a would li than I th can be se shipment would it year for "Yes.") That is o them; so peaches a profit. T have soug men can help you tion. I do a little Then we your insp say that your good Mr. I Hon. address or were built but that in cold storag you gentle Very few our people speakers t the people can concei help, more study out ments have ought to b works out properly p believe in have his w not send it shy off and shipments, can succeed

We have built. Now you see these things must be remedied; we must not have cold storage simply half the distance and let the fruit spoil the other half. If you get your stuff on that Hanrahan car, let the railway keep it for a week until you get a steamship with a cold storage compartment; but we must have it continuous from beginning to end. That is not a big job, not a wonderful thing to do; it can be done, and if you fruit growers want it it will be done and must be done. (Hear, hear, and applause.) Then I think we have proved that we shall have in a few years in the old land an unlimited market for the grapes which you grow in this country. (Hear, hear.) They say the Englishman will not eat the grapes. Neither would I once. I had to learn to eat them. I didn't like them, but it didn't take me long, and it did not take most of our people long. I did not like tomatoes once; I like them now. Lots of things we have to learn. A boy takes a long time to learn to chew tobacco; but he gets there if he keeps at it—(laughter)—especially if he sees his neighbors continue in the same wicked practice. You will see Englishmen on the streets in London begin to bite these grapes and nibble at them, and some other fellow will say, "What is that fruit! I would like a taste of them"; and it won't be long before they will say "That is better than I thought it was." That is what will occur; that is what has occurred. Grapes can be sent, and they can be sold, and three years from now if we can get a continuous shipment, you would get a good market for our grapes. If I can do that, how much would it be worth to this Province? What would you say if I spent \$2,000 or \$3,000 a year for the next two or three years working this thing out? Would it pay? (Voices, "Yes.") A hundred time over, a thousand times, of course it would. (Hear, hear.) That is one of the legitimate objects, then, that those in authority ought to have before them; so that I think that we have proved at all events these two things: that our peaches and our grapes can be taken over there, and that both of them can be sold at a profit. The Government of Ontario has recognized the importance of all this, and we have sought to encourage the erection of cold storage buildings, and any of you gentlemen can get, up to a certain limit, an amount of money from the Ontario Government to help you work the cold storage plan. We think we have gone far enough in that direction. I don't believe in spoon-feeding; you must help yourselves. (Hear, hear.) We do a little to encourage you, but if you will not help yourselves you must give it up. Then we have built at the Government's expense this railway car, which will be here for your inspection, and anybody who looks into that car and understands the principle will say that is what it ought to be, a proper cold storage car. I guarantee that it will carry your goods in a safe condition.

Mr. MORDEN: Is it the Hanrahan system?

Hon. Mr. DRYDEN: Yes, it is the system that Sir Charles Tupper referred to in his address on cold storage. Those cars in South Africa referred to by him in that address were built on the Hanrahan system. Perhaps Sir Charles did not himself know that, but that is perfectly true all the same. We have also just built a sample for a farmers' cold storage plant—ice-house you would call it—at the Agricultural College, and any of you gentlemen who go there next summer will find it in operation and see how it works. Very few of you will be able to erect one like that; but what I am seeking for is that our people generally will become interested in it. I have asked my Farmers' Institute speakers to do what they can to study out the principles of cold storage and give it to the people as they go about the country, with a view of making an impression, because I can conceive of nothing that is more important at this juncture—more important for help, more important for prosperity in your business. So that I suggest to you that you study out the principles as we have brought them to you. Now our experimental shipments have proved just what Mr. Woolverton has said, that only the best of our fruits ought to be sent there, because as you understand that creates a proper impression and works out the market; the other way you work it down hill. That best fruit must be properly packed. Let us listen to what they say on the other side, even though we don't believe in their theories. The Englishman is a very off-hand kind of a fellow, he will have his way. Give him his way. He does not want this moss, he says it is dirty. Do not send it, that's all. Do not try to instruct him, for the first thing you know he will shy off and will not bother with it; but send your fruit properly packed in continuous shipments, and I guarantee now if you do not succeed you can blame John Dryden. You can succeed. I guarantee success along these lines, if you only pay attention to these

things. I heard some friend here—excuse me for referring to him—speak about the fruit growers being one class in the community, and he did not like class legislation. Now, I don't want him to say anything more about that—(A voice—"No"); I'll tell you why. If I had adopted that theory I would never have done anything for you. The gentlemen who are interested in this fruit industry are possibly not interested in many other branches of agriculture. Certainly you are not very much interested in live stock, and I have been with the Live Stock Associations up at Guelph last week. They are another important class. I am helping them, and I am helping you; on what principle? Because you and they are interwoven with all our people and you cannot be separated, that is the reason (hear, hear) and there is not a banker, there is not a merchant, and there is not a laboring man that is not interested in your success and your prosperity (hear, hear). The banker makes his money because of the increase of the volume of trade, and when I am able to do anything that will help the fruit grower to produce more I am helping the banker, and he knows it, and I have got more friends among the bankers than I have in some places among the farmers. Some of those men down in Toronto have said—and the message has been brought to me; "There is a man up there in the Parliament buildings that is doing more than a dozen or two other politicians." Why? Because we are working them on these lines leading to practical results of increased production and better production. The banker is interested, the merchant is interested, because when you make a little more money and a little more profit you buy considerably more goods than you did before, and he makes a little money; and the laboring man knows when you are prosperous he always has something to do, and so it goes. And what I want to say is that although you belong to one class, and although you may not belong to my class, we are all tied up together, and whether we live in the east or the west, I am glad to say in these latter days we are bringing our east and west together and recognizing that we stand and fall together, for we are all Canadians and we cannot separate ourselves to any extent at all. Now I want to say just one thing and I will stop. Be careful and let this Association continue to be a live Association. (Hear, hear, and applause). I find some fault with these Associations, and they have thanked me for finding fault with them. I am not finding fault with yours; but do not let this Association ever be attacked by the yellows (laughter) or the scab, or the dry rot (laughter) or the scale, or the blight, none of these things. These terms are applicable; you appreciate what I say. Now I say that this association ought to be so alive that it would have power and influence in this country. You represent one of the greatest of our industries, one concerning which there are the greatest possibilities in the future; and there'ore do not run around in a circle making a road from which you cannot extricate yourselves. I can tell you of associations in this country which seem to get into a little circle, and have kept going around and around every year. Of course they had a convention; I never could see any use of it. They elected a few officers; they may have had an exhibition and carried away a few prizes, but as for any impression of the country, or any help to the poor man that was outside the ring, I could not find it. I have tried to spur them up, and those associations are alive to-day, and they are going to do from this time on a very much better work than they have ever done before. Now let me suggest that this association should never get into that position. Always remember that when you are helping yourselves and the class to which you particularly belong, you are helping me and and you are helping all the country. (Loud and prolonged applause).

The PRESIDENT: Gentlemen, I certainly think that the outlook for fruit growers and fruit growing at the close of the 19th century is just about all that we can desire. Everything is looking very favorable for us. I think the one thing perhaps that we have to dread, and that hangs like the shadow of a great calamity over us, is the San Jose scale. From what has been said this morning I shall be very glad to hear from some of you gentlemen in reference to this matter; let us hear what you think about it and what you think ought to be done. We are glad to know that at headquarters they are willing to do for us whatever we may ask, I think.

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REPORT OF THE COMMITTEE ON SAN JOSÉ SCALE.

BY MURRAY PETTIT, WINONA, ONT.

I must first apologize for not having my report prepared, as I did not expect to be called upon until Friday morning. I have some notes which I intended to put in shape before that time. However, I will give you a few facts that I found by travelling through the infested districts for that purpose. It was thought advisable by your Executive that I should do so before this meeting in order that we might have an unbiased opinion of the condition of affairs which I found very much worse than was expected. The scale has increased and multiplied in those districts to an alarming extent. I first visited an apple orchard that was inspected in 1898 and considered free from scale. This fall at picking time the owner found that every tree in the orchard was infested, some of them so bad that the fruit was worthless. This was an orchard of about 400 trees 25 years old, a fine healthy orchard, and it is his intention to take out a portion if not the whole of it this season. The next orchard I visited was one of 300 trees, an apple orchard. In 1898-99 all the scale that was found in that orchard was taken out. At the present time there is not a single tree there that is not infested. On the same farm there is a peach orchard of 800 trees that was inspected in 1898; four trees were found infested and taken out. At the present time there is not a single tree in that orchard that is not infested, and many of them so bad that the fruit was worthless. Another orchard I visited was a pear orchard inspected in 1898 and considered free from scale. That is now so completely coated with it that from the road you can see that the trees are covered with scale; even into the orchard a rod or two it shows and the same in another orchard of 800 or 1000 peach trees about 100 of which were taken out under the conditions of the Act in 1898. At the present time every tree in that orchard is infested. I could go on and enumerate many more, but this is just about a sample of the condition of things in those infested districts. While talking with some growers in those infested districts, one who has had considerable to do with inspecting the orchards and has watched it closely said there was a section there of about twelve square miles where he did not think there was an orchard that was not infested, and in a good many of them not a single tree in the orchard but was infested with scale. In talking with another intelligent grower there I asked him what he thought could be done or what the outcome would be. He said to rid that locality of the scale every fruit tree and shrub would have to be destroyed, and then he thought it would not be safe to plant for a few years.

Hon. Mr. DRYDEN : Did you get any information as to what this gentleman thought better be done under the circumstances? That is what I am specially anxious to hear.

Mr. MURRAY PETTIT : Well, I found that public opinion had changed very much since 1898, and many people who then thought it was a mistake to go and destroy orchards, hearing and believing that this scale was not really as dangerous as a good many supposed, have changed their minds very much, and I think would now be very glad to have that same Act enforced as it was then.

Mr. MORDEN : Did you examine the forest adjacent to the orchard?

Mr. MURRAY PETTIT : I did not, but there is one place in that section where the forest trees have been chopped off and there is a new growth come up, where the conditions would be very good for the scale if it would attack forest trees, and I am told the inspectors have spent a great deal of time there and they have not in one single instance found scale on forest trees.

Hon. Mr. DRYDEN : We have never been able to find it.

Mr. MURRAY PETTIT : They offered a dollar to any person who would bring them a piece of forest tree wood with scale on it, and they had a good many specimens sent them but none of them was San José scale.

Mr. MORDEN : Take wild rose bushes in the forest; would they have it?

Mr. MURRAY PETTIT : I could not tell you that. One very successful grower where scale existed said that if he were furnished first-class trees and paid \$1 each to plant them and take care of them until they died he would not take them—which does not seem a very encouraging outlook for fruit growing in those sections. I also visited different orchards where spraying had been done under the Commissioner, and where different brands of whale oil soap had been used and also petroleum. The trees sprayed with

whale oil soap from Ohio were cleaner than those sprayed by other soaps. But where petroleum had been used the trees were much cleaner than where whale oil soap had been.

Hon. JOHN DRYDEN: They used all sorts of mixtures. I think crude petroleum is used, and then the ordinary refined oil mixed with water in different percentages. I have never seen any actual report of the effect of these different treatments, but on general principles I think that what Mr. Pettit is saying now is correct, that the crude petroleum is perhaps the best, but they tell me there is a difference in the petroleum coming from one place and another; that one is better than another.

Mr. MURRAY PETTIT: They register different degrees of strength, I think. One grower who had used three tons of soap had absolute faith in the soap keeping the scale in check. The inspectors had different marks which indicated bad, medium and slightly infested, and where these experiments were tried on those trees in these different conditions you could arrive pretty closely at the results, but it was decidedly in favour of petroleum. It is a very important question with us as to what can be done. It looks like a terrible undertaking now to stamp it out, but it seems to me that in localities that are free from it we should undertake to do something. Even in municipalities that are free, or nearly so, it would be well if we had legislation similar to the Act in force respecting the Oodling Moth, to be adopted by municipalities, obliging every grower to inspect his trees once or twice each year, and to certify before a commissioner that he has done so and also whether he has found any infested trees or not. Then under the San José Scale Act as it now exists these trees could be ordered destroyed; a great many sections could fight the scale for some years and possibly keep certain sections free from it. The municipalities bordering on the lake shore where one side would be protected in that way would be an advantage.

Hon. JOHN DRYDEN: Do you think municipalities would themselves consent to pay something towards the cost of destruction?

Mr. MURRAY PETTIT: I think some municipalities would.

A DELEGATE: Does it require a very strong glass to discover the scale?

Mr. MURRAY PETTIT: No, just an ordinary little lens, in fact where the tree is badly infested you can see it with the naked eye, in just walking through the orchard.

Hon. JOHN DRYDEN: This gentleman if he is not accustomed to it probably would not, as he does not know what to look for. The inspectors who have an educated eye can tell by the peculiar appearance without a microscope.

A DELEGATE: Does it affect the leaves—change the color or appearance?

Hon. JOHN DRYDEN: Yes.

Mr. A. H. PETTIT: Did you find any instance where the trees had been injured in that way from the use of whale oil soap?

Mr. MURRAY PETTIT: No, not from soap; but I found where they had been injured from the use of petroleum.

Prof. SAUNDERS: Were the trees killed in that case?

Mr. MURRAY PETTIT: There were one or two trees killed and others were injured. I believe they scraped it off, and seemed to make a start again where they were scraped off.

Mr. JEREMIAH CLARK (P.E.I.): Did they spray the oil with water in it at all times?

Mr. MURRAY PETTIT: I think the strongest was about 40 per cent.

Mr. CLARK: I understood that in spraying in bright sunshine they could put on the pure oil.

Mr. MURRAY PETTIT: Yes. On damp days or in damp localities or in water I am told there cannot be as much oil used as there can in dry localities.

Mr. E. D. SMITH: There is a clause in the San José Scale Act that provides that the inspectors for the Yellows and Black Knot also inspect for the San José Scale. I would like to ask Mr. Dryden who is supposed to pay these inspectors.

Hon. JOHN DRYDEN: Those inspectors are appointed and paid by the municipality, I understand, but Mr. Smith will excuse me if I say I am a poor man to ask what the meaning of that law is. We never know when we make laws just what the meaning is till some Court or Judge tells us; so I do not exactly know how that is.

The SECRETARY: The cold storage car to which reference has been made by the Minister of Agriculture is at the Grand Trunk Station, Market street. I suggest that we go down to visit it at 9 o'clock to-morrow morning.

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Mr. A. H. PETTIT: The principle is just as simple as can be. Mr. Hanrahan's principle is nothing but the natural current of air, a perfect circulation, and in this manner: The fruit is put in; it being warm, the warm air rises. The moment it does that the cold air from the ice in the center of the car follows it and the circulation thus created is simply like two wheels running around in the car. As the warm air passes over the ice it deposits the impurities of the atmosphere and they run off in a liquid, while the air comes back in a perfectly pure condition. Before Mr. Hanrahan explained this to us in Grimsby we had instances of pretty nearly the same thing to prove it. Some of our shippers who were shipping in cold storage had placed some of their peaches in unloading in the north side of a large barn or packing-house, where it was in the coldest possible place and pure air. This is really not cold storage, it is only cooling the atmosphere and purifying it. It is one of the simplest things in cold storage that a man can imagine and when you see the car I think you will say it is perfect in every condition.

Hon. JOHN DRYDEN: The difference between this and the ordinary G. T. R. car is that the ice in this Hanrahan car is in the center, while in the ordinary car it is in both ends. The same principle works in an ordinary G. T. R. car, but you see then you have a current of air starting at each end coming against it, each working against the other. It operates something like two streams of water that you set running along the floor here; there is a portion in the center where there is a stagnation. These two currents of air naturally fight against each other and there is really no continuous circulation in the car when you have the ice at both ends, but when you put it in the middle you have two compartments in the car, one at each end, and the ice cools the air and it runs around in this way.

Mr. A. H. PETTIT: As there are eight or ten gentlemen in the room who have been shipping through the season and shipping in this car three or four times, I think everyone will express his delight and pleasure at seeing a system that seems so thoroughly perfect in carrying our fruit in cold storage.

Prof. SAUNDERS: I may say that this system was adopted in 1886, when we sent over to London a display that astonished London at that time, and we showed about 5,000 plates of fruit at one great exhibition of the Horticultural Society. Mr. Hanrahan fitted that cold storage chamber up as a temporary thing in one of the Allan vessels, and the fruit all reached there in perfect order. Mr. Dempsey's father was one of the men there at the time, and Mr. Starr of Nova Scotia, and Mr. McD. Allan, and Sir Charles Tupper also mentioned in his report of the exhibition the wonderful success that had attended this exhibit of fruit which reached London in this fine order in a similar compartment on the same principle to what has been spoken of lately. I have listened with the greatest attention to the speech of the Hon. Mr. Dryden to-night, and am very glad indeed to find that any man occupying the position that he does has been willing to give the time and attention to such a subject, to master it so thoroughly as he seems to have done. It is so seldom that busy men, especially men occupying high positions politically, can find the time to go into these details, however much they may have the will; but he seems to have devoted all the time that is necessary for a thorough knowledge of the subject, and I have the greatest faith in the future under such circumstances that any obstacle arising will be overcome as long as we have a man like him at the head to direct.

VOTE OF THANKS TO HON. JOHN DRYDEN.

The Secretary moved, seconded by Mr. Harold Jones: Resolved, that the thanks of the Fruit Growers' Association of Ontario be hereby tendered to the Hon. John Dryden for his excellent and encouraging address and for the efforts made by him to check the spread of the San José scale; and further that we hereby extend to him our sincere thanks for the successful work accomplished during the past season in the experimental export of tender fruits and that we hereby express the hope that he will continue to interest himself in furthering this business until it has become established on a trade basis." The motion was carried unanimously. This motion was seconded in several places.

Mr. MORRIS: I would like to ask if there is any probability or chance of the government resuming the plan of destroying the trees for the San José scale, even with the

help of the Dominion Government. The two Governments could work together. As I understand now it would be impossible financially for the local Government to undertake it, but if the Dominion Government took it in hand as well as it could be done, and I think under the representations of Prof. Saunders they would assist.

Prof. SAUNDERS: The Dominion Government is spending a great deal of money now in fumigation chambers.

Mr. MORRIS: I think the feeling of the country is that that is the best plan yet, and if the money was only forthcoming that that will be the cheapest way in the end.

Hon. JOHN DRYDEN: I do not think any answer can be given to that. I cannot answer for one Government let alone two. (Laughter.) I am afraid that you will have difficulty in getting any Legislature or any of our Legislative bodies to agree to such expenditure of money. The trouble is that in this matter no living man can tell now how much it will cost, and I want to tell you further that if you are going to destroy a man's trees you have got to give him a little more than we have been giving him under our present Act, or he comes out with a shotgun and an axe or two and drives you off the premises, and I do not know that I can blame him very much. The individual is sacrificed for the benefit of the whole, that was our theory, but nobody dreamed that we were going to cut out the whole orchard; we thought we were only going to have two or three spots, but men rebelled, and that was the difficulty.

Mr. MCKINNON: Although I cannot express an opinion as to whether it would be expedient to go on with the destruction of trees infested with the scale or not, I would say that if it is necessary, in my opinion the Dominion Government much more than the Provincial Government should be the one to saddle with the expenditure, for the reason that when fruit growers asked the Dominion Government to prohibit importation of nursery stock from the infested States some years ago they refused to do it. If they had done it I believe we should have had no such enemy to fight. (Hear, hear.) Then it was not within the power of the Provincial Government to prevent the importation, it was within the power of the Dominion Government. It was on the advice of their professors I believe—I do not know whether it was Prof. Saunders or Prof. Fletcher, or who it was—but on the advice of their official advisors they declined to do it, on the ground that there was no danger whatever of the scale making headway in such a cold climate as that of Canada. Now, if they are responsible for all the evil that has come upon us, are not they rather than the Provincial Government the parties who should put their hands in their pockets and try to rid us of this evil if it can be done at all? (Hear, hear.)

Prof. SAUNDERS: I think I must try to correct Mr. McKinnon's facts, because I know something about the history of this business. I know that the Hon. Mr. Fisher took the very promptest action possible as soon as it was brought under his notice, that it was desirable to take this action, and by so doing he prevented that year the scale going to every part of Canada, as it would have done by the sale of diseased trees from different parts of the United States in every part of the country. The action of the Dominion Government was so prompt that it shut off all probability of the scale going any further, and it was done just as soon as the information was presented to the Minister. I do not think there is on record any action of the Government taken at any time in connection with any law affecting the welfare of the people that was done in such a short time as that was done, and they were most prompt and energetic in carrying out the law.

Mr. MCKINNON: It was before Sydney Fisher had anything to do with the Department of Agriculture for Canada that this happened. (Hear, hear, and applause.)

Mr. MCNEILL: There is another aspect of this affair. Whether the Provincial Government or the Dominion Government do anything for us or not, the trouble is upon us and the trees are going to be destroyed. It appears to me that we have just got to look this condition of affairs in the face, and now that the scale is being recognized as being here, and every intelligent fruit grower is supposed to know something about it, that we will simply have to bear the expense ourselves individually, and that it will come in exactly on the same basis as any other noxious disease or pest, and that it will take its place just beside those. Now, we get no compensation when we have scarlet fever at our house, and have to shut up shop, and have considerable difficulty with our business, and have to fumigate, and all that. I believe we have just got to face the difficulty in exactly the

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same way with the San Jose Scale ; that as no man is allowed to keep a mad dog on his place, so no man will be allowed to keep San Jose Scale on his place—(Hear, hear)—and that he himself will have to be responsible for ridding his orchard of that pest. The thing has got to that pass that we may just as well face the music. I feel that I am speaking this in the presence of the Minister of Agriculture, from whom of course we take everything we can get. At the same time he shows himself to be a man of common sense, a man of ability, a man for the hour, and he will not misunderstand this when speaking to fruit growers. While I am on my feet I may say this, that I never listened to a more matter of fact and encouraging address than we have had to-night from the Minister of Agriculture in connection with this transportation and cold storage question, that if we as fruit growers just live up to our standard of the present time and show them we are alive I believe we shall begin the new century under very auspicious circumstances notwithstanding the scale.

Mr. MORDEN : It strikes me in this way. Imagine for a moment this scale infests my orchard. What is the result if we have no legislation, no action? My orchard is doomed ; it will be of no value ; and if I face the whole situation I am no worse than if nothing whatever was done, and if the Government does as they have done, give 25 per cent. of the value of that tree, they have done something that we may call generous. Taking the view of course that this is in the public interest, I do not consider that it is wrong in the Government to do it, but I fail to see where the individual can grumble because his orchard is doomed. If it is a contagious and infectious disease and 25 per cent. of the value is paid I think the arrangement is very liberal indeed under the peculiar circumstances, as the trees are of no value.

Hon. Mr. DRYDEN : Mr. Morden does not quite appreciate the position of the men whose trees are attacked. When the attack comes first his orchard is not destroyed ; it takes a good many years. The man looks at it in this way ; he asks, what is that orchard worth to me next year, and the year following, and the year following that, before the scale gets a real foot-hold? Now when he goes to the court, the court will not give him damages for what the orchard is worth in the future, and we have acted on that basis. The inspectors say, these trees are diseased ; they are doomed. They say they are not worth so much as they were when they were healthy, and they knock off a little percentage from that. I confess to you when they get off the percentages and only 25 per cent. is left it is a mighty small sum, and the man will not stand it. We have absolute rebellion in some places—men out with axes and shot-guns and saying, "You dare chop down that tree and I will chop you down ;" and you have got to face that. It is a sacrifice of the individual for the whole, and while I believe what Mr. Morden says, and while if I have scale in my place to-morrow I would cut the whole blessed thing down and burn it, yet men do not take that position and the legislators will not face it.

E. D. SMITH : What is the position of the man who has got the scale, and the other man has not?

Hon. JOHN DRYDEN : He ought to be protected.

E. D. SMITH : By the report Mr. Pettit gave this is spreading to a most alarming extent, and unless some stringent measures are taken at once the man who has not got it now will be overtaken by it in a few years. I think we should take immediate action to have some law by which the man who has not got the scale could be protected. (Hear, hear.)

The PRESIDENT : Do you think it possible to have anything better than what we started out with in the first place?

E. D. SMITH : That is the cutting down with 25 per cent. compensation? No, I don't think so.

The PRESIDENT : Didn't we start out on the right lines exactly?

E. D. SMITH : Certainly, I always thought so. I thought the amount given was most generous, and I always thought it was a tremendous mistake that those men refused to that law.

Hon. JOHN DRYDEN : What happened? Somebody up there in the County of Lincoln sent down men to represent the fruit districts of this country in the Legislature, and they stood up there and fired their shots at me, and said, "This man does not know what he is talking about. I tell you it is all nonsense ; the scale won't hurt anybody. You can't find it ; it doesn't exist," and all stuff like that. What am I to do? I

have not got you people down there to back me up, that is the difficulty, and I was reluctantly forced and compelled by force of public opinion to stop the operation of the law. I believe we were on the right track, there is no doubt about that; if we could have spent a few hundred thousand dollars more, if need be, and have cut it out altogether, it would be a great blessing, but there was the trouble—public opinion was not with us.

E. D. SMITH: I do not think the Government now would be justified in paying that amount when the people who were most interested refused to accept the situation as it was then, and generous as it was then, now that it has spread perhaps over ten times greater area, and will cost nearly fifty times as much money to stamp it out. It seems to me that Mr. McNeill's suggestion is on the right track, that we have got to face the situation now as we have had with other diseases, the yellows and black knot, where a man was caused to cut them down and suffer the loss himself, and a statute more stringent even than The Black-knot and Yellows Act ought to be on our books at once.

A. W. SMITH: About a week ago I listened in a meeting to some of those very same men who made this protest, and they candidly and publicly acknowledged that Mr. Dryden was right, and they were wrong—(Hear, hear)—and if the thing had gone on as he started it, it would have been the best thing that could have been done for the country.

Mr. BUNTING: The gentleman who was strongest in opposition in the House about the scale, only on last Saturday was obliged to admit his mistake, and to agree to support almost any measure that the fruit growers of the Niagara district would bring up and send to him for representation in the House. This only shows that we are to be congratulated on the ability Mr. Dryden has shown in listening to the views of the fruit growers and endeavoring to carry them out.

Hon. Mr. DRYDEN: I am delighted to hear that. It is only an illustration of what I was saying a little while ago—the force of public opinion has had its effect on that gentleman you see. Public opinion is now working in that direction, and he is going to fall in with it. It only shows that you gentlemen have only got to stand behind and form your public opinion and you can get any law you want.

Mr. MURRAY PETTIT: But the great trouble was our hands were tied. This Association and our journal and all those who were willing and anxious to see the Act enforced, were quiet for the same reason that Mr. Dryden referred to in regard to the reporters; we did not want it to go into the press and all over the country that we were being over-run with San Jose Scale. We were not trying to rouse public opinion, while those who were opposed to it were doing all they could. It is just the difficulty.

Hon. Mr. DRYDEN: I should be very glad if, after having talked it over, this Association would express themselves in some resolution as to what is the proper course to pursue. I shall receive with all the importance it deserves whatever conclusion you gentlemen come to. I do not say what we shall do or can do; I am not prepared to say at the present time: but it is going to be a difficult matter to carry on our old operation I think.

The PRESIDENT: There have never been two opinions expressed by this Association or any member of it, so far as I know on this matter. We have never faltered. (Hear, hear.) We want destruction at any cost. The question will come up again.

The Secretary suggested that, as the minutes of the last annual meeting had been printed, they be adopted as printed. This suggestion was carried.

REPORT OF FINANCE COMMITTEE.

The Secretary read the report of the Finance Committee, which on motion of the Secretary was adopted.

We, your Finance Committee, beg to report that we have examined the accounts for expenditure made by the Executive and we find that they were made in the best interests of the Association.

We are pleased to report also that we found the accounts in perfect order for inspection.

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

Grimsby, Nov. 23, 1900.

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TREASURER'S REPORT.

The Secretary read the Treasurer's report for 1899-00, which on motion of Mr. Scarff was received and adopted, as was also the report of the Auditors.

RECEIPTS.

Balance on hand Dec. 1, 1899	\$ 635 51
Membership fees	4,435 35
Advertisements	355 53
Samples, etc.	16 00
Binding volumes.....	31 35
Government grant.....	1800 00

\$7,273 75

EXPENDITURES.

Canadian Horticulturist.....	\$2,554 95
Salary of Secretary—Treasurer—Editor ..	1,200 00
Commissions	673 35
Premiums	533 79
Illustrations	439 34
Printing and stationery.....	250 93
Bookkeeper	240 00
Annual meeting expenses	230 40
Affiliated societies (lecture course)	211 55
Postage, telephone and telegrams.....	172 66
Reporting	124 10
Affiliated societies (organization)	103 67
Committees and delegations	87 00
Express and freight	46 36
Collection and interest.....	43 69
Book binding.....	39 15
Auditing.....	21 00
Miscellaneous.....	11 64
Advertising.....	9 00
Balance on hand Dec. 3, 1900.....	281 17

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The Secretary laid on the table the first printed report of this Association, held in 1861. The Association was then called the "Fruit Growers' Association of Upper Canada."

REPORT OF THE NOMINATING COMMITTEE.

MURRAY PETTIT read the report of the Nominating Committee, and moved, seconded by Mr. Harold Jones, that the report be adopted as read.

T. H. RACE: It is the privilege of every member of this Association to bring in an amendment to that report, and I am a member of that committee and would like that understood, because there are suggestions made sometimes that this is a close union and a self-appointing society. These nominations are simply made to be submitted to the Association for their acceptance or amendments.

The President called for amendments—there were none and the report was carried. The names of the officers appear on page iv.

FRUIT PACKAGES FOR EXPORT AND OTHER PURPOSES.

BY L. WOOLVERTON, GRIMSBY, ONT.

The need of uniform packages for our fruits is at the present time most apparent. We are just entering upon a new era in our fruit trade, an era of growing and shipping only first class fruit, graded to uniform sizes. For this fruit the box is better than the barrel, and has been used for three years past in our experimental shipments.

In this connection it will be interesting to quote from the *American Agriculturist* an article written by A. S. Baker, of Covent Garden, London, on the "Needs of the English Market."

"The London Market is not well understood in this country as regards the condition of apples: The people here with the finest men, the finest varieties and the finest soils, are getting the lowest prices for apples. England is dependant on three sources for her apples—the United States, Canada and Tasmania. Tasmania need not be considered, as her apples come in when there are none from America. The apples have to come 14,000 miles and the fruit when it reaches England is dry, flavorless and of poor quality. There are no such conditions confronting American growers, who are only 3,000 miles from London, and with good refrigerating plants on the ships.

5 F.G.

"The subject of package is of the greatest importance. Many packers put good fruit in both ends and poor stuff in the center. There are three sizes of barrels going to Europe. The buyer knocks out the head, dumps out the apples and makes an offer for the greatest quantity of one grade, which is generally the culls. The shippers would get as much to ship only culls and keep the little good fruit at home.

"The Tasmania package is a box 22 in. long, 11½ in. wide and 10½ in. deep, outside measurement, made like an orange box, with thin sides and three-fourths inch ends, bound with wooden hoops. It holds 50 lbs., or one English bushel. These boxes pack much closer in the hold of a ship, and as freight rates are based on the amount of cubic space occupied, 20 per cent. more fruit can be carried in boxes for the same money than in barrels. Barrels of apples contain too much latent heat and the fruit in the center does not carry as well. The boxes of apples shipped from Tasmania bring 15 shillings per box in 1,000 lots at auction. If the American shipper will grade his stock and pack it in boxes, he will get as much for a box of fruit as for a barrel which holds three times as much. Only two grades of fruit should be sent abroad.

"The remedy for lack of uniformity in standard packages does not, I believe, lie with the Government to pass a law upon this subject, but with horticultural and other societies to adopt a standard package. These should be labeled with the name of the society or board of trade, at the town from which they are shipped. If you ship to the English market the kind of goods and in the sort of package the Englishman wants, there is no limit to the amount of stuff he will take. London banks will advance 80 per cent. of the market quotations on apples to Tasmania shippers. These apples are never opened in the market, but the grades and marks being known, are sold this way. There is a system of inspection at the port of shipment by which the brand of the Sydney chamber of commerce is put on boxes of butter. The butter in Australian standard boxes will bring 112 shillings per 100 lbs. against not over 95 shillings for American butter."

The *Fruit Grower*, also of London, England, refers to Canadian apples in the English market, in an article from which we clip the following :

"What are your views upon the use of the bushel box for apples; do you think that it is suitable for all kinds of Canadian and American apples?" "Well," answers Mr. Walter Draper, "we are satisfied that for ordinary fruit the barrel is as good as any package that could be devised, but for choice, evenly-graded and well colored fruit there can be no doubt that the bushel box is a decided improvement. For such we would guarantee ready sales at good market prices, and in quantity, too. The Californian senders of Newton's adopt this kind of package, and we are sure the Canadian shippers will find such a box of great value from a trade point of view."

Now, it is evident that we have a magnificent market for our fancy apples and other fruits if we can once agree upon uniform brands and uniform packages.

After the experience of the past year we propose for our adoption the following list :

Apples—Barrel*, staves 28½ inches long, head 17½ inches, circumference at bilge 64 inches. Box—22x11x 10½, inside measurement, with ½ inch sides, and ¾ inch ends.
Pears—22x10½x5½. Peaches—Box 18x10 x 5½, with ¼ inch sides and ¾ inch ends.
Grapes—Crate 16 x 16x4½, with ½ inch ends and ¼ inch slats, and containing four veneer baskets.

The barrel holds just 96.51 Imperial quarts, or 100 American quarts, while the barrel we have been using is the flour barrel size with staves 30 inches long, head about 17 inches, which holds 103 Imperial quarts.

The barrel which we recommend above is the one adopted by the American Apple Shipper's Association, and the Nova Scotia people, who ship a great deal to the Boston market, have petitioned our Government to legalize this barrel. I would ask that this Association appoint a committee to examine these packages now placed before you and to report upon the same.

I would also in this connection advocate the inspection of all goods put up in these special packages, just as our Tasmania friends are doing, or else we can never expect to have our fruit in them sold by grade, without having them turned out, as is necessary

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with the barrels at the present time. We want to establish confidence, and to do this we must see to it that we ship only inspected fruit true to grade marks.

I would ask that it be made necessary to mark on all the packages of apples, pears or peaches, the variety, the diameter, and the shipper's mark. This is perhaps enough, but if grade is also required, No. 1 means first-class samples of apples not less than $2\frac{1}{2}$ inches in diameter, and pears not less than $2\frac{1}{2}$ inches in diameter; while A No. 1 means the same, but $2\frac{3}{4}$ and $2\frac{1}{2}$ inches in diameter respectively.

Now to avoid the mistakes of the past, we should advocate that all fruit put up in boxes and sent forward in special storage be subject to Government inspection. I would recommend that a committee be appointed to consider this matter also.

I will be glad if you would adopt these packages so that we might all use the same, or refer it to a committee to examine and report. It is most important as we are entering on this business that we do agree together.

Mr. MCNEILL: As the secretary and others have given considerable attention to this matter, and have had large experience in shipping, I for one would be content to take his experience; and as some standard packages should be resorted to I see no better way of making a beginning than by adopting these. I would therefore move that these packages as named in the Secretary's paper be adopted as a standard as far as possible for the present, subject to revision every year. I would make no further recommendation.

Mr. SYMINGTON (Port Dover) seconded the motion, which was carried.

UNIFORM FRUIT PACKAGES.

An important meeting of the committee on uniform packages was held at Grimsby on Wednesday, the 20th of February, 1901, to discuss the question of uniform packages. The following resolutions were passed:

1. That, in the opinion of this committee, legislation should be enacted prescribing certain standard sizes of fruit baskets for use in the home markets, and that all baskets used of other sizes be branded indelibly with the minimum capacity in quarts.
2. That this committee would recommend the following standard sizes of baskets: No. 1, capacity 15 or more imperial quarts; No. 2, capacity 11 imperial quarts, with a depth of $5\frac{1}{2}$ inches; No. 3, capacity $6\frac{3}{4}$ imperial quarts, with a depth of $4\frac{3}{4}$ inches; No. 4, capacity $2\frac{3}{4}$ imperial quarts, with a depth of 4 inches; No. 5, berry box, 1 Winchester quart; No. 6, berry box, 1 Winchester pint.
3. That the branding of sizes of baskets or berry boxes be compulsory in the case of imported fruit, as well as that Canadian grown.

WINDBREAKS.

By J. A. M. SMITH, ST. CATHARINES.

No observing man who passed through the country after the gale of last September and saw the thousands of bushels of apples under the trees where the orchards were not protected and noticed the fruit still upon the trees where they were protected, can doubt the usefulness of windbreaks; and no one, who had his orchard a part protected, and a part unprotected, but could fully appreciate their value when he came to gather his fruit. I think no one will question the statement that there was more than one-fourth of the apple crop of Western Ontario destroyed by the wind besides large quantities of pears, plums, peaches and other fruits, entailing a loss of many thousands of dollars which might have been saved had there been suitable windbreaks planted around the orchards. In my own experience I know that fully three-fourths of my apples, particularly of Greenings, went down in an exposed corner of my orchard while behind the windbreak there were very few if any.

In my peach orchard, which was protected by a windbreak of Norway spruce, there was scarcely a dozen baskets blown down, while many of my neighbors whose orchards were unprotected picked hundreds of baskets from the ground, which they were obliged to sell at half price or less. I am satisfied that my windbreaks of twelve to fifteen years growth have saved double their cost in fruit, besides in several instances having saved my peach trees from being winter killed.

Two years ago, when so many trees were frozen out in Essex and in the Niagara district, several of my neighbors—whose orchards were exposed to the wind and the snow was blown from their roots—lost several hundred of their trees, while mine, only a few hundred yards away behind the windbreak, escaped uninjured—and not only my fruit trees but my berry plants have been greatly benefited by protection. There was a time in the memory of some of us older men when we had forests enough to partially protect us from winds, and damage to fruit from them was a rare occurrence; but since they have been cut away the wind has free sweep through the country and not a season passes but we have more or less loss, and the question of protection and how best to accomplish it is well worthy of the attention of this association and of all interested in fruit growing. I am glad to see that the question of forestry, which is a kindred subject, is to be discussed at this meeting, and I hope that something practical will grow out of these discussions; for I believe that unless the forests and shelter belts which have been so ruthlessly destroyed in this country during the nineteenth century, are not at least partially restored in the twentieth that the twenty-first century instead of dawning upon a land of fruits and flowers and fertile fields as this Canada of ours is to-day, will dawn upon a land of barrenness and desolation.

Prof. MACOUN: We have had considerable experience in tree planting at the Experimental Farm at Ottawa. One of the reasons why such good fruit can be grown in the Grimsby District, and in the Annapolis Valley, N.S., is because they are well protected; and I think it is very important in planting new orchards in the country to first of all look for natural protection, because, leaving aside the subject of wind protectors, if you get good natural protection your trees will not suffer from winds as they would otherwise. If you cannot get natural protection, the next best plan, as Mr. Smith has well said, is to plant windbreaks. By planting a Norway spruce windbreak at the time you set out your trees, it will make as rapid or more rapid growth than the trees, and by the time the trees need a windbreak, when they are in full bearing, it will protect them very much indeed. The Norway spruce will make from $2\frac{1}{2}$ to $3\frac{1}{2}$ feet in growth every year if you cultivate it properly for the first two years. It is one of the most rapid growing trees there is, and I believe that it is the best tree to plant for this purpose. We have a great many Norway spruce at the Experimental Farm, and after thirteen years experience there, I should say it was the best to plant for the purpose of a windbreak. I do not think it is necessary to plant a dense windbreak. One row of Norway spruce, with the trees from ten to twelve feet apart, will be quite sufficient because in 12 or 15 years those trees will be nearly meeting, and you will get a windbreak sufficient to break the force of the wind, which is really all that is needed. If you check the circulation of air altogether it affords a protection for insects and offers more favorable conditions for diseases spreading, so that it is much better to just merely break the force of the wind and thus protect the fruit from being blown off the trees, or the trees from being injured, than it is to stop the circulation of air to a much greater extent; so that in planting windbreaks I would recommend simply planting one row, or at the most two rows. If you plant two rows of trees I would suggest putting the second row behind the first, about ten or twelve feet from the first, and putting the trees opposite the intervals in the first row so that it would act as a screen. During the last three years we have planted a windbreak on two sides of the orchard of the Experimental Farm, and I expect that in time that will be a great protection to our orchard, which is very much exposed. I am very glad, indeed, that Mr. Smith has brought up this subject, because I consider it a very important one.

Mr. McNEILL: I am glad that the Professor has put in that proviso about having the windbreaks thin. Personally, I would have them 30 or 40 rods apart if I were planting for windbreak. I must say that my experience is not favorable to windbreaks on the whole. No doubt there are many advantages, as has been enumerated here, and for certain sections of the country no doubt a windbreak is an advantage, but at the same time we have numerous examples, in the County of Essex at least, where the windbreaks have been a positive injury, for the first five or six rows of peaches particularly. A windbreak is merely for the purpose of breaking the wind in severe climates. It is of no special value, so far as I can see, in the southern portion of this Province particularly. I really never could see the great advantage of it in winter protection. It was of no advantage to us in 1899—merely a windbreak; and I must say that I never could see

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the economic advantage of the windbreak. It takes a great deal of plant food. Where it is allowed to grow thick it is certainly a protection for fungus diseases and insects; and while it is picturesque, and while I admit I would do a good deal for that alone from the esthetic side, from the economic point of view I have yet to be convinced that there is any advantage in a windbreak.

The PRESIDENT: Did you have any experience in the Leamington district or in your own vineyard that year?

Mr. McNEILL: In my own vineyard, as the result of bad farming and the efforts of my former neighbors, we had a windbreak for about 300 feet, a particularly dense one—so dense indeed that it was one of the things that I was always going to tackle, and it was almost two big a job for me—and it was not the slightest protection so far as the frost was concerned. The vines had been killed right to the edge wherever there was clean culture. The grass sward was a protection, and woods served a far better protection than did the windbreak. It was not a question of protecting from the winds at all, it seemed to be a question of the frost, so that where we had clean culture it went right to the edge of this wind-row along the fence. It is an old French farm.

The PRESIDENT: Did it happen to be on the right side of the windbreak?

Mr. McNEILL: Yes, the rows ran north and south, and it happened to be on the west side.

A. M. SMITH: Did it happen to retain the snow?

Mr. McNEILL: No, there was not enough snow to run a wheelbarrow.

Mr. PETTIT: That is just the point. Where we have snow and it drives away, we have damage on the vacant places, and that is where a windbreak would be an advantage.

Mr. McNEILL: A cover crop would gather more snow and leaves and other accumulation of matter that will be a better protection from the frosts than your windbreak. A windbreak is very efficient during such winds as we had last fall undoubtedly, but beyond that I see no value in them.

Mr. MORDEN: A windbreak is out of the question where you have a narrow farm like Mr. McNeill's, because it takes up some room; but where you have wide farms or a series of farms it is a good protection, especially if planted on the crest of a hill, but a windbreak for frost protection is not of much use and a cover crop would be very much better. I have wondered a thousand times, however, that the farmers did not protect their buildings and their houses and their barns for their stock in the matter of winter's cold in the farmers' houses. In the middle parts of Ontario land is sufficiently plentiful to allow room for windbreaks, but no doubt there is a little waste and you cannot make the ground available right up to the very windbreak itself. A sparsely planted windbreak would not do very much service in a great wind such as we had last autumn. One of the great difficulties that fruit growers have is the tilting over of their trees from the south-west.

The PRESIDENT: Is there any need of having that trouble?

Mr. MORDEN: Well yes, there is where the wind abounds as it does in the Niagara peninsula.

The PRESIDENT: Cannot we avoid that by proper planting?

Mr. MORDEN: No, not always. No doubt something can be done in that direction by slanting your trees more to the south-west, and that is all right, but it will require rectifying from time to time, and a windbreak will do a great deal in that direction to enable your trees to keep upright. I am speaking now of trees that may be a quarter of a mile away from the windbreak.

Prof. HUTT: I think this is a most important question, and I am glad Mr. Smith has brought it up at this time. I am rather surprised to hear our friend McNeill condemn windbreaks as he has done. I am sure if he had had a strong windbreak some years ago when his house was nearly demolished he would not have experienced what he did at that time. (Laughter).

Mr. McNEILL: The windbreak was not in it at that time at all.

Prof. HUTT: Windbreaks are certainly of great importance for the protection of buildings and crops throughout the whole country. I think Prof. Macoun is right in saying that the Norway spruce is one of the best trees for windbreaks that we have. We have a number of excellent windbreaks at the Agricultural College at Guelph. One that we like best of all is a Norway spruce tree, a double line of trees, the first row alternating

with the second. The trees are about 8 feet apart and the rows 8 feet apart. I think that we might have them 10 or 12 feet apart. Another point is that it is very ornamental in summer, to plant the trees 30 feet apart and then alternate them with a row of maples. The light green foliage of the maples in summer time helps to relieve the dark evergreen and makes a very ornamental windbreak and an effective one in summer. In the winter time, though it acts as a screen, it has not the same value when the maple trees are bare. I think the idea of a windbreak should not be to make a dead calm under the lee of it, but simply to make a screen that will break the force of the wind. The arrangement of maples and Norway spruce as I have suggested gives a good screen and a dense windbreak at the time we want to hold our fruit on the trees. The maple holds its leaves on till all the fruit is off, and thus fulfils the full purpose of a windbreak. I hope the time will come when every farm will have its windbreak or shelter belt. Out in the West where we have been forced to give attention to this subject, they put up belts 30 or 40 feet in width of mixed trees, forest trees, and from those sheltered belts they can take timber as they grow up, and they keep cutting them; cut off one row and have the other coming up and let that sprout up again and cut off another row—and they get their wood supply from these shelter belts. The trees used out in the Western States very largely are willow and soft maple. Of course in those Western prairie soils they grow with remarkable rapidity, and they keep up a constant supply of timber and firewood from these shelter belts and always manage to cut them so that they have complete protection. Out in that country they had no trees to begin with, and they have been planted largely, while we in this country have been cutting off the forests. I was rather surprised to find in the Western States that they had more trees and windbreaks than we had in this older and supposed to be better part of the country.

The PRESIDENT: What age would one of those shelter belts they put out there be before it would be able to supply sufficient wood for farm purposes?

Prof. Hutt: After the trees have been out fifteen or twenty years they can start and cut them. The willow they cut in ten or twelve years.

The PRESIDENT: That is a very important consideration for them.

Prof. Hutt: They get all the wood they want out of these.

Mr. McNEILL: I was speaking of a windbreak from an economic or fruit growers' standpoint. When you come to speak of forestry and its use in the protection of buildings, that is an entirely different subject, and there is no stronger advocate of forestry and tree planting than I am. I was just warning the ordinary fruit grower who cannot afford on his limited area of land to plant a windbreak; but what has been said here with reference to the windbreak for buildings from an esthetic standpoint and as a cover for waste land is quite proper, and too much cannot be said of that. The point that I wanted to impress was that you could not get the crop for five or six rods from a windbreak. You are thus wasting a large part of very valuable land sometimes on small farms; but certainly where you have large areas of waste land, and places where you can afford to plant windbreaks for esthetic and other purposes, as a matter of comfort, by all means have belts of trees.

Mr. HUNTER (Scotland): I have been quite an enthusiast at tree planting, and we have planted shade trees in our village for thirty years, but I am beginning to find some of the disadvantages. Windbreaks are like advice—you may get them in the wrong place. It seems very nice to have windbreaks in the barnyards to protect the buildings and so on, but in practice it is not so easily carried out. It is very difficult to grow trees in such positions, especially on those dry plains of Burford and Fairfield. I have planted trees close to the barnyard, and have mulched them and worked around the roots, but they get so hot and dry that it ultimately destroys those young trees and we can get very few of them to grow in those places. Then there is a great deal of traffic around the barns—waggon work and machine work and cattle going around, and those trees will get run over and tramped over and destroyed. It would be a matter of great expense to get any decent trees around a barnyard. You can get them round a kitchen, where nothing is allowed to come, just where it is least required. We have shelter belts around Norwich, running the entire length of the farm, and it certainly has a wonderful influence upon the air. You can go there in the winter when it is blowing a cutting gale and it does not matter which side of that wind protector you are on, you will see the benefit of it—it seems as if the weather had moderated a great deal and it has become nice and calm.

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I planted trees twenty-five years ago that afford me a great advantage to the orchard, but we find great damage from the roots, and we cannot grow crops up to within two or three rods of the row. Soft maple particularly takes a lot of moisture. Even if I put on a heavy coating of manure on that ground those trees seem to get the benefit of the manure, and I have had to cut a heavy drain near the fence. I find they are a protection to my trees from getting sun-scorched, in protecting the one side, because it is well known that even planting will not guard against that. You might plant with an angle towards the one o'clock point if you like, but when it comes on a heavy rain and the ground gets really wet in the summer, then comes on a gale from the west, even if you are protected the tree will lean over. You must upright those trees and tramp the ground solid a little to the west of them again or they will get away from you. These are trees that were planted five or six years ago, and many got leaned over last summer when the land was very wet. I find no trouble so far as the hardiness of the fruit trees in winter is concerned. Just as a tree is protected so it is equally tender; as it is not protected so it is equally hardy in the strength of the bud and its ability to stand cold. It is well known that the home of the peach in this country is in the mountains of Virginia, away up in the highest places, dry and unprotected, and I find that where they are more protected the twig grows slender and more delicate, it does not seem to be able to stand the weather and be productive as those in the open. The same remark applies to grapes as far as we have tried them, only in a limited scale. I cannot grow such grapes as some of the Rogers original varieties at all within reasonable distance of this shelter—the mildew prevents them; but if I grow them in the openest place I can or where the least possible shelter is, I grow them without the sign of mildew, and they will ripen the wood better and enable them to stand the winter better than those that are grown anywhere near shelters. In fact the latter do not mature the wood at all; a great deal of the wood will be green when the winter comes on; and in that way it is a doubtful benefit so far as the hardiness of the peach or grape is concerned. The apples seem to vie with the maples, although the maples may be a great distance from them, in getting their tops up slender to get breath. You must be able to spare quite a breadth of ground for these wind breaks if you use them anywhere near your fruit trees. It would be a great advantage at a distance, but not close.

Mr. GRAHAM: Having one of the oldest windbreaks in the Province, I feel the advantage more and more every year. My orchard is in the valley and I live up on the mountain where there are some very fine trees around the house, but before those are matured they are nearly all on the ground; whereas the very large Kings will hang until they are fully matured, right until falling, and I certainly would urge every one who has a natural wind protector such as the side of a mountain to take advantage of it and plant your trees there. Up near Collingwood mountain, where the wind has got a sweep, thousands of barrels of fruit have been swept away during the last two years just for want of a windbreak.

Mr. J. W. SMITH: Not only a windbreak in the shape of trees is good, but where there are hills in the right direction it is a good protection. Being in the nursery business I have looked this matter up somewhat. A year ago last winter there was a great loss of nursery stock where there was a wind protection where it held the snow, but there was no hurt to the trees, neither to the nursery stock nor to the bare trees. My farm runs up the side of the mountain and runs down half a mile. Well, within a quarter of a mile of the mountain I never lost a tree nor a vine, but when I got to the lower end of my place, I had an orchard there that I lost about 35 or 40 per cent. of the yield. A windbreak holds the snow when it is in the right direction whether it is a hill or whether it is planted. What we want in this direction is to get the snow to lay where it falls. After a thaw the water begins to run about 60 or 70 rods distant from this mountain; but go near the windbreak and the snow lies there and does not wet it enough to let it run. The water runs down on the frozen ground and leaches, and it makes no difference. While it is laying, if it comes a heavy frost it will freeze the trees. Up near Leamington the trees freeze down when the weather becomes cold and the lake freezes over, because they have not enough of snow. A windbreak north and south won't do it, but if they have a windbreak east and west at intervals I will guarantee it will save 75 per cent. of the trees that are now killed one year with another. Two-thirds of the peach trees in the vicinity of Jordan, one of the best peach countries in Canada, are on the

high land, and two-thirds of the crop this year generally was not fit for market. Why? Because the trees were not protected. But go up near the ridge where they were protected, and every orchard has good fruit. Few of them knew the cause was root-killing. Near St. Catharines I found a whole orchard of Keiffer pears of 50 trees, and all the fruit was laid on the ground after that terrible wind rushed over them. If that orchard had a windbreak just to the south end of it, there would not have been 10 per cent. of the fruit off.

Mr. HARRY PICKETT (Lorne Park): You cannot grow small fruit to perfection in an exposed position where wind has full sweep, because it dries out the surface of the soil so much. With small fruit where it is sheltered you can get the best result.

Mr. J. W. SMITH: As nurserymen we take up our trees and heel them in. If we take up a tree and heel it in properly, which we do sometimes, in an exposed place, and the thermometer runs up to 80 degrees, which it does sometimes before we can get them out to our customers, and there comes a wind, say twenty miles an hour, and it blows all day for two days, you will see that the tops of those trees are wilted, and if not watered very soon and the parties to whom they are sent do not take care of them, they will begin to dry up, and they will blame the nurseryman for it. If you had a good windbreak around your packing ground to the south and west it will prevent the wind from blowing through there, you can keep them for four days and in better condition. Trees heeled in a nursery in a cool time, will keep for three or four weeks, but it is the wind blowing twenty or thirty miles an hour that dries our trees out. A windbreak will prevent that.

Mr. SHERRINGTON (Walkerton): I think I can solve the problem of these gentlemen in the south. Sell out and come to the county of Bruce. The snow will stay when it comes. I left home Monday morning and had good sleighing. The snow stops with us all winter. You can go out in January and dig the ground. No frost in the ground. We are not so troubled with being frozen out in the winter; the ground is dry and no frost in it during the whole of the winter. You may think sometimes we are very late in the spring in getting on to our land. As soon as the snow goes away we are ready to go to work and the ground is ready for us; there is no frost in the ground. All our plans go right on. The snow fell this year a little earlier than usual; it fell a week ago last Sunday, and it is still on the ground I presume, and very good sleighing, and this stays with us until April and it goes away. I have some dewberry, the leaves of which remain green right through the winter. I would like to have some of you gentlemen come out there and start fruit growing. We have a country there that is second to none in Ontario; we can grow everything except peaches and grapes, and we are growing peaches. In a few years I think we will be able to show you peaches that will just make you hustle.

The PRESIDENT: Peaches will not stand 20 degrees.

Mr. SHERRINGTON: They do with us.

The PRESIDENT: They must be thoroughly matured.

Mr. SHERRINGTON: We have peaches that have stood 30 degrees below zero, and fruit every year. There are trees there sixteen years old that have never missed but one year in fruit.

The PRESIDENT: What variety?

Mr. SHERRINGTON: It is a seedling of the "A 1." Mr. A. H. Pettit has seen it. I have travelled considerably as a judge at fairs at Port Elgin, Lucknow, and all through there, and they all say they have peaches every year. I think there is something in this, that it does not seem to thaw out as it does in the south. The temperature seems to stay more even during the winter, and the buds don't seem to start out till later. The same with pears. I think there is a great deal in an even temperature during the winter.

The PRESIDENT: There is no doubt your conditions for the roots of the trees are much better than they are with us.

Mr. SMITH: We would like to go up there for our meeting next winter.

Mr. SHERRINGTON: I have mentioned that for several years. They are very much interested in fruit growing up there; that district is going to be one of the very best apple districts in the Province, pears and all kinds of small fruit the same, and the farmers there are very much interested, and they would be very anxious to have this Association hold their annual meeting with them another year; and the reason I am pressing it now is that I think when people are ready for it, that is the time to get in.

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The feeling may go off them again and they would not probably take hold. They would at the present time. It is not the town that is agitating, it is the farmers.

Mr. HUNTER: Is the San José scale up there?

Mr. SHERRINGTON: We have not got it, I hope. I think it would be to the interest of the Association, if they want to extend the influence of this organization through the Province, to go up there for a meeting.

A. M. SMITH: Put in your application for next year.

Mr. SHERRINGTON: This is the third or fourth time we have applied for a meeting, and we are getting tired. You talk about apples. I think the average in our section would be in the neighborhood of 40,000 barrels. We put up 22,000 barrels ourselves, two of us, besides other packers. For quality we do not take a back place with any part of the Province.

FORESTRY FOR FARMERS.

By L. B. RICE, PORT HURON, MICH.

I would be very glad on this occasion if I could say some complimentary things of you. We bring to you the greetings of our Society, and know that you are doing a great work, but I am especially interested in your meeting.

In taking up this branch of foresting, I find that I am very much in line with two of those whose names appear on the programme as preceding me.

I am glad to come before you to present a subject to your consideration in which I feel so much interest, and at the same time one of such vital importance to Ontario.

On my way from Port Huron to Brantford on the train, of the hundreds of wood lots along the road, I did not see one that was properly cared for. In no case was there any chance whatever for young trees to start, and sooner or later the old will be gone and none to take their place, and unless the owners are roused to the situation, your beautiful hills dotted with bits of forest will become bare and bald. In our own country the same conditions exist.

In taking up this subject, I would have been glad to tell you of the work being done in my own State to preserve large tracts of forest land and protect it from fires and from thieves, or to have told you of the great work being done by our general government in the same line, or in helping corporations or private parties who wish to plant out new grounds, by sending out expert men to advise in selecting location or in planting out the trees. But my time is all too short; I must narrow down my talk to the farmer of to-day in his present needs, for the proper care of such small lots of timber as he may have on his farm, or with the man who wants to plant out a young forest either as a wind-break, or shelter belt, to meet his future wants for wood, posts or timber, or to be a source of profit in ten to twenty years.

I shall not take up the subject from the sentimental point of forestry from the love of the trees or the beauty of the landscape, but from the cold business standpoint of dollars and cents. I want to have a home talk with the man who has a small piece of woodland left on his place from the destruction of the great forests that grew all over this land only a few years ago. After that I will have a word to say to him who wants to plant out a new grove of timber.

To the first I want to say that your trees lack vitality, many of them have died and you have cut them out for wood or for timber, and of those that are left, few have made very much growth in the last ten or fifteen years, and dead tops and limbs are to be seen everywhere. Soon the day will come when you will be called to cut those out too, and you have no young saplings moving up to take their places. Like the old veterans of the sixties they are fast passing away and soon the last one will be gone. What is the matter with them? That is just what I want to talk with you about. If you will listen for a few moments I will try and show you where you have done wrong. I would like to tell you of the mysteries of the forest depths, of the elves and the fairies who dwell there, and watch the falling seeds and the nuts, and cover them over with leaves that they may grow into other trees, that plant the wild flowers and feed the song birds.

Only a few years ago your little timber lot was a part of the large forest where the wild deer and his companions roamed at will. The sunlight never penetrated its depths,

and the winds never rustled the fallen leaves. Every autumn the ground was covered over with a nice new clean coat of leaves, while those that fell the year before went rotting on the bottom making a ready prepared food for the trees when they should start to grow in the spring. In addition to this warm coat of leaves, the first snows of winter came sifting down through the lofty tree tops and gently and evenly spread a blanket of white over the leaves, the old logs and the brush, there to remain during the long winter, an additional protection from the cold. Though the storms rage over the tree tops, no wind disturbs this blanket of snow, but each succeeding one spreads more snow to add to the warmth.

But how does all this apply to my wood lot? I will show you. Under these warm coverings the frosts of winter never penetrated, and the leaves hold a reserve of moisture against the drouth of summer. In this loose loamy soil, made rich by the rotting leaves and wood, the feeding-roots of the trees found abundant food to give them luxuriant growth. The result of this was that all of the roots were spread out near the surface of the ground. This was proved by the over-turned tree showing that no roots struck down but all were flat on the surface. Now, if you remove this warm, moist covering from the ground what will be the consequences? The roots of those trees that never felt the frost before will be frozen solid in winter and pinched and shriveled by drouth in summer.

How have you removed the leaf covering? You have cleaned away the large forests, and left only a small tract of timber. This you have pastured till the cattle and sheep have eaten all the young growth that was coming on, and nothing is left to break the force of the wind. Now it rages through the woods and the autumn leaves and the winter snows have been swept away. Under these changed conditions with these tender roots both frozen and dried do you wonder that your trees are dead and dying? The only cause for surprise is that any of them are alive.

A few of the younger elms and soft maples will adapt themselves to these new conditions and strike a deeper root, and survive the ordeal. But all of the older trees must go sooner or later; their doom is sealed, and they must go unless you can restore the original condition of things before it is too late.

Nature has provided a renewal system for its forests. It is a system that has been on trial for a good many thousand years, and so far it has worked well.

In the forests primeval down to this date the old trees have died and fallen and the younger ones are already well grown to take their places. As with man so with trees, the old and feeble have fallen during decade after decade, and the younger and the sturdy have so soon closed up the vacancy that they have not been missed.

What is this renewal system? It is simply this: The little winged seeds come fluttering down to find a lodgment, the maples, the elms, the ashes, the poplars, the beechnut, the chestnut, and the acorn, and the leaves come after and cover them over. Early in spring the tender young shoot stands up through the leaves, and the tree of the future appears. Who is there that has not gathered the delicious young sprouts of the beechnut in the spring and eaten them? The woods are full of these young trees, the pine, the hemlock and the cedar, all struggling for existence, but you have turned in your cattle and your horses, your sheep and your hogs, and have browsed and trampled and routed till there is not a young tree left. Thus you have destroyed what little protection there was to the wind swept ground, and there is no chance for a seed to stand. Now the question is, what to do to restore all of these conditions so as to save the life of the trees. The first thing to do is to drive your stock out of the woods, then put up the bars and lock them, and throw your key away so that you will not be tempted to turn them in again.

Then let the grass and weeds grow as they will. They will make a "catch" for at least a part of the leaves, and hold them on the ground to make a winter protection for the roots of the trees.

We study to get the best winter protection for our orchards, and why should we not for our forests? Some few seeds from the trees will find lodgment in these leaves and weeds, and will get protection enough to grow. You can assist nature by going through the woods and scattering seeds of desirable trees with a free hand. In vacant places plant in walnuts, catalpas, or any variety of trees that you may want. You will be surprised to see how soon the young trees will cover the ground and the older

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ones will stand out with renewed vigor. You must allow a thick growth of underbrush of whatever kind around the outskirts of your timber lot, particularly along the fences, as it helps to break the force of the wind.

This manner of renewing the timber on the land will apply to any waste land, steep hill sides, river bluffs, or ravines, where there is already a sparse growth of timber, or where the timber has recently been cut off. To illustrate this I will give to you the experience of one of the best experimental workers in the country, Prof. Budd, of Iowa Agricultural College.

He says: "As an example of extreme rapidity of growth, twelve years ago I purchased 40 acres of recently cut bluff timber land for the small sum of \$200. At that time I might have secured hundreds of acres of similar land, which now is cut up into homesteads, where the occupants make a scanty living by cultivating the marshy, porous soil. The 40 acres is now like an oasis in the uninviting tract, with an even growth of white oak, red oak, burr oak, hickory, ash, red elm and other valuable timber. Thousands of these trees are over one foot in diameter, and peculiarly tall and straight owing to their close growth. If cleared and the young trees utilized at the present prices for railroad ties, timber for wagon hubs, posts, rails, wood and other economic uses, the proceeds would far exceed the aggregate selling value of the crops grown on adjacent tracts of like extent for the 12 years."

Many of you have waste places on your farms where there is a sparse growth of timber or where the timber is being cut that is of little value for cultivation now in use for pasture. If you would fence the stock from these lands, and protect from fire, you might repeat the experience of Prof. Budd, on your own farms. Should you wish to change the timber you could scatter in seeds of catalpa for posts, of the white ash, oak or hickory for timber, or you could purchase cheap seedlings of the chestnut or black walnut and plant in desirable places. Keep out the stock and the fires, and nature will do the rest, and you can rest assured that she will do her work well. Our work must be in harmony with her, and as nearly as possible restore the original condition of things. We cannot fight against nature without losing every time. Surely there is pasture enough on your broad acres without robbing future generations of the forests which are their natural birthright.

Now we come to the second part of my talk which is to the farmer and others who wish to start forest plantations, wood or timber lots, shelter belts or wind breaks. In these days of blizzards and tornadoes shelter belts and wind breaks may be the means of saving much property, for the young trees will strike a deep root, grown as they are in exposed place, and they will withstand almost any storm.

After you have made up your mind that you want a plantation, the next question is, what shall I plant? When we hear a man speaking of planting a new forest we think of one who is looking forward to the wants of his grandchildren to the third and fourth generation, but it has been demonstrated that a man who has passed the middle age of life may plant to meet his own wants on the farm or in the vineyard, or he may plant and look for good returns financially.

If you want stakes, posts or railroad ties, you will plant locust or the hardy catalpa. The latter will give the quickest returns but it is not absolutely hardy with us. It is on its northern limit here, but it has this advantage, if it winter kills while young it will send up a half dozen sprouts in the place of the one killed, for the root does not kill. If after it is older you can use it for posts and stakes, so nothing is lost, for your trees need thinning out as they grow. Even catalpas should be planted much thicker than they can grow to prevent their making tops too near the ground. If instead of planting catalpas to fill up the ground, which are worthless while small, you plant white ash, oak or hickory, you can sell the thinnings for hop-poles. These will bring, when $1\frac{1}{2}$ to 2 inches through and 7 feet long, \$10 to \$12 per thousand feet, and as they get larger the limbs are good for timber and tops for poles or wood. White pine can only be planted for timber when it reaches good size, so it must have other trees between to produce good results. In planting either black walnut, white pine or catalpa, you should give the space that you expect them to occupy when good sized trees, and as it is necessary to have something between them to force them to struggle up to catch the light of the sun, thereby giving them tall, straight bodies without limbs, you will use something that has a commercial value, while small as stated. If I were

to start a young forest I would plant 200 black walnuts to the acre; that would make them 14 feet 10 inches each way. I would then plant between them, with rows both ways, the catalpa for posts; this requires 600 trees, and they with the walnuts would stand 7 feet 5 inches each way. But experience has taught us that at less distance than that the catalpa will make heads in from 3 to 5 feet from the ground and be comparatively worthless, so I would fill in the one now and plant another between to make them as close as the trees in a nursery row, with a tree as above for hop poles requiring 10,000 trees.

I will give you some statements from reliable persons showing the profits that have been received from trees so planted out, and the growth made in a few years.

In former years the locust was planted throughout the country for post especially in the west, but the advent of the borer caused them to be discarded for the handy catalpa. Now thousands of acres of these trees are being planted by railroad corporations, and by private individuals for posts and for ties.

I quote from Bulletin No. 27, U. S. Department of Agriculture, Division of Forestry; "A plantation of catalpas near Hutchinson, Kansas, planted in 1892, began a year ago to reimburse the owner. (That would be in 7 years.) The trees taken out at that time made two posts each. One or two stakes could have been taken from the tops.

Another from the same: Mr. S. W. Yaggy, four miles west of Hutchinson, in the sandy valley of the Arkansas River, has 440 acres of catalpa. He planted at the uniform distance of $3\frac{1}{2}$ to 6 feet apart. The first planting was done in 1890. When the trees were two years old they had formed tops within 3 to 5 feet from the ground. This was a serious defect, so the trees were cut back to the ground. After six years from the time of cutting back 2500 trees were cut out from eighty acres in thinning, only the larger ones being taken out, each making two posts. These were sold for \$1240.

The same authority states that Mr. E. T. Hartley, near Lincoln, Neb., has one acre planted to willows, which has provided all the necessary fuel for the farm, and to-day there is more standing timber on it than ever before. The plantation is in a ravine of little value for other purposes.

I will add a word for the Carolina poplar as grown in Port Huron. In 1883 I planted a row of these trees on a dry sandy pine ridge in front of a house on Willow st. Just before leaving home I measured some of them, and found them 6 feet in circumference 2 feet from the ground. Another lot planted the year before measured 6 feet 4 inches, same height. One of these trees would give a good 16 foot saw log, and more than a cord of wood from the top. The wood is light, tough, and strong, and seems well adapted for any purpose where thin, light, tough timber is needed. I have specimens of the timber here, and would invite any one to examine them. But of all of the timber of trees of this latitude for profit, I think that the American black walnut heads the list. It is indigenous to our soil, and perfectly hardy, and is comparatively free from the attacks of depredating insects. It grows rapidly into a tree of noble proportions, and while it loves a rich, bottom ground it will thrive on almost any fairly good soil. Its roots strike down deep into the subsoil, and it gathers largely from the elements, and if the leaves are left on the ground it will enrich its own soil. It has sometimes been called a witness tree, because its presence is a living witness that the soil is rich. It will not stand the tramping feet of stock, and it needs the full protection of a growth of timber around it to attain perfection.

In the Michigan State Hunt Society report for 1882, on page 81, Wm. H. Regan, Secretary of the Indiana State Hunt Society, says, "A man in Wisconsin planted a piece of land with black walnuts 23 years ago. The trees are now 16 and 18 inches in diameter, and have been sold for \$27,000." The writer does not give acreage or number of the trees, so we cannot judge of the profits.

In the report of the same Society for the year 1885, I find an exhaustive report on the "Forestry Problem," from the pen of Charles W. Garfield, who has earned the name of "Michigan's Forest Champion." Mr. Garfield was at that time, and for several years before, Secretary for that Society. He says, "Mr. Hughs, of North Atchison, has had an experience of thirty years in tree growing in Kansas. Nine years ago he planted a lot of walnuts on his place in Doniphan County, and now they are large, vigorous, and handsome trees. For the first two years their progress was slow, but after that they grew as fast as cottonwoods. He picked half a bushel of nuts from

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each tree the 7th year, and the same summer they afforded a grateful shade." "Mr. Hughs is satisfied that a walnut planted in '82 will make a better tree in '89 than a soft maple of ordinary planting size, set out at the same time."

Mr. Garfield also reports the following: "Ten years ago Mr. Graves, of Texas, planted ten acres of black walnut by hand, 200 to the acre, in all 2,000 trees. The trees are now nine inches through, and are growing at the rate of one inch a year. Last year the trees bore 400 bushels of nuts, which brought \$2.50 per bushel, or \$1,000 for the ten acres, good interest for land worth \$10 per acre." "If at the age of 20 years one half of the trees are cut and sold for \$25 per tree, \$25,000, the nuts from the remaining 1,000 trees will be worth \$2,500 per annum." He might have added that in ten years more the timber remaining would be worth \$50,000. This is certainly a good investment, but it is much easier to figure large profits on paper sometimes than to realize large profits in actual business. "The hills are always green in the distance."

I will give you one case more. Mr. C. B. Wilson, of Jacksonville, Ill., drove me out to his farm some time ago to see some black walnut trees. I measured them and they were sixteen inches through.

They would saw into timber a foot of clean black walnut boards and have the tops, limbs and stumps left. The stump itself would sell for \$5, to saw into veneers.

"What could you sell these trees for, for cash?" I asked. "I could sell them for \$25 per tree, and in ten years I could sell them for \$50." That would be at the rate of \$10,000 per acre for the use of the land for thirty years, and the by products such as hoop timber, posts, wood, nuts, etc., would more than pay all of the cost of planting and care of the trees and interest on the investment, taxes, etc.

This seems astounding, but when you know the man who has compiled these statements, and his care not to be misleading, you can but feel that they are true. You will notice that each case referred to in this report comes from widely separated localities, and that all agree in placing the value of trees at twenty to twenty-three years old at \$25.

With this fact established, I see no reason why one need to hesitate to plant a forest where the black walnut should be the leading tree for profit.

I don't for a moment suppose that every one who plants will reap such a harvest as the figures above would indicate; but if you plant wisely and cultivate well for the first five or six years, you cannot but win success. After that time you can leave the place to itself, only cut out the extra timber as it needs thinning. Leave a protecting growth of anything that wants to start along the fences, witch hazel, tagalden, anything that will help to check the force of the wind in sweeping through and carrying away the leaves.

After a few years you will be surprised to find that the native trees of the locality are coming in to fill up the ground as the others are cut out and make this a perpetual forest. If you wish you can scatter seeds of especial varieties for an undergrowth. Your larger trees will thrive all the better for this thick undergrowth on the ground, particularly if this is made up of a variety of timber.

Notice the old pine monarchs of the forest towering far above the thick timber. How they thrive.

In taking hold of this work do not start out because you think that it is the sure way to wealth but because you need the windbreaks and the protecting influence of growing trees. Do it to meet the demand for wood, stakes, posts and other timber on your farm. Do it for the love of the beautiful in your surroundings and the diversified landscape. Do it for your children and for coming generations. Do it because the future needs of your country demands it of you. I care not what your purpose may be, if you will only do it.

Since reading the above at Brantford I have received the following from Mr. A. E. Sherrington, Fruit Experimentor for the Bruce District near Georgian Bay:—

WALKERTON, Dec. 22nd, 1900.

Dear Sir: I measured those walnut trees I was speaking to you about while in Brantford, and I find them better than I thought they were. They measured 6 to 8 inches in diameter at 3 feet from the ground and they were from 60 to 70 feet high from the ground to the first limb

and as straight as can be. They were planted 18 years ago this fall. The nuts were put in the ground where the trees were to remain. A few were transplanted and they have made the largest growth. They are planted 12x6 feet alternate in the row. There are about 300 in the lot, and the party is planting out a large block next spring.

This is a good report, showing as it does what may be expected so far north. Evidently, his trees are too near together to give them such height for the size. If he had given four times the space and had filled in with catalpas he could cut out four parts now.

CO-OPERATION IN THE SHIPMENT OF PRODUCE.

BY ERNEST HEATON, TORONTO, ONT.

The question of the systematic marketing of our produce is perhaps the most important practical question before the people of Ontario to-day. As Mr. Dryden said last night in this hall, the export problem cannot be tackled by individuals acting separately. The only solution lies in co-operation. We have now to discuss how this can be done, but the subject is so broad that it is impossible for me to attempt to deal with it fully in the short time at my disposal.

Co-operation in the shipment of fruit at once brings to our minds the orange groves of Southern California, where, as you all know, the marketing of fruit has been developed into a science, and has been made a most remarkable success.

A few years ago I paid a visit to that country, when I had occasion to study closely the orange industry, and I could not help feeling then that, if we only gave the same care to the culture of our fruit orchards in Ontario as the people of California give to their orange groves, and if we were only half as systematic in the marketing of our fruit, we should have no cause to envy the fruit growers of the Pacific slope.

There are always two kinds of grower in every community, the people who want to sell for spot cash, and the people who prefer to consign their stuff in the hope of making a larger profit. With both of these California does better than Ontario. Here the buying of fruit has been left open to any inexperienced, irresponsible man who likes to enter into the business with the assistance of an advance from an English broker. We know the result! Dishonest packing and the discrediting of the apple business of Canada.

In California the business is almost entirely in the hands of a few large firms—like the Earl Fruit Company and Messrs. Porter Bros., and others—who have a permanent staff of experienced buyers and trained packers and who ship their fruit in their own refrigerator cars. Their brands are known all over Canada, the United States and Great Britain, and they have succeeded in pushing the sale of California fruit each year further and further afield.

But it is for their method of consigning fruit that Californians are chiefly remarkable, and it is to this that I wish particularly to draw your attention to-day.

I do not pretend to say that we could duplicate the system here, but I am quite sure that there are some of its features that could be adopted in Canada.

The growers form themselves into associations. There are local associations and a central association. The members can sell outside of their association, but if they do they are bound to pay a forfeit of ten cents per box. The local associations employ skilled hands to grade and pack the fruit, and they ship the fruit to the Central Exchange. The Central Exchange has agents at the different market centres, who telegraph market reports and receive the fruit for sale by private contract, or by auction as they deem best. When a shipment is received from the local association it is forwarded to the market which, according to the received reports, promises best at the time. The shippers receive dividends from the central association, a portion of the proceeds of each shipment is retained. If any shipper suffers a loss from the damage of delay of fruit, all the members of the association contribute to make it good. After this sum is deducted an average is struck of the proceeds of the shipments, according to the different grades; the actual cost of the management of the Central Exchange is charged up, and a final dividend is declared at the end of the season. The Central Exchange also fulfils a useful function by buying wholesale and distributing to the local associations the material for the manufac-

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ture of the boxes for packing fruit. The popularity of this organization is constantly increasing and to-day the fruit associations of California market thirty-five per cent. of all the citrus fruit grown in the State.

This, of course, is all very interesting, but the question that concerns us in Canada is, can we learn any useful lessons from the people of California? Is it possible to apply the principle of local associations here?

Each local association should own or lease a cold storage warehouse, packing house and evaporating plant. If a number of responsible men would club together to lease such buildings for a term of years there would be no difficulty in securing capital to erect them and the Government would help.

There are a good many people who say it is impossible, as co-operation involves an absence of jealousy, and a willingness to give as well as to take, which is generally supposed to be rare amongst us here. Our people, it is said, are not built that way. In answer to this, we may point out that there is a local fruit growers' association already existing at Burlington on co-operative lines for the exportation of fruit, and if co-operation has been successful in the manufacture of cheese, why not in the marketing of fruit? Again it is said what may succeed in established fruit districts like Burlington, cannot be successful in more scattered communities where orchards are smaller and further apart, and it would not pay to bring apples to a packing house to be graded. There is something in this objection; but it is matter of degree, and there is no reason why portable grading machines and expert packers should not be employed in the less thickly populated sections of the country.

For a central association controlled by shippers there is a great field for usefulness, even if local associations are likely to be slow in formation. Such an association would not be restricted to any particular market, and there is no reason why it should be confined to fruit. It might, with economy, embrace all kinds of produce, for the services required by the different kinds of shippers in many points identical. Its functions would be to give instructions how to prepare produce for market, to furnish to its members the latest information respecting market prices and sailing dates of ocean vessels, to arrange for railway transportation, to look after shipments at the seaboard, to control shipments so as to regulate prices by preventing a glut in any particular market, to receive produce at the port of destination for sale, either by auction or private contract, and generally to push the sale of Canadian produce, wherever a market can be found.

It must be borne in mind when we are organizing this Association that we cannot succeed in selling our fruits in the British market unless we dovetail our machinery with the established channels of trade.

Through an association of this kind special contracts could be made for the raw material to be used in the cases and wrappings used for export and special rates might be made with rail and ocean steamship lines, and pressure might be brought to bear upon the brokers in Great Britain to make a straight commission charge covering their commissions and all charges *ex quay*. This would overcome the objections that have been made to the alleged excessive charges of commission merchants.

It will be said, perhaps, that all this should be done by the Government. I do not think so. The work must be done by business men, not by politicians chosen for their party services. But Governments, like Providence, help those who help themselves. Such an association will have a potent voice in formulating the policy of the Government, or, let us say, in giving them backbone in any forward policy they may adopt, and Heaven knows! there is room for such a force. Some people imagine we have made great progress in the development of cold storage, and cold storage means a great deal to the people of this country, but if we look at Australia we can see where we stand. At present there is engaged in the Australian trade a fleet of 114 steamships fitted with mechanical refrigeration while Canada has only 23 vessels trading from Montreal, and two of the Australian vessels have more cold storage capacity than all the Canadian vessels put together. So far is cold storage as concerned, we have reason to be ashamed of ourselves. We have only tinkered with the question.

I would impress upon you, gentlemen, that it is most important that this subject should be thoroughly discussed at the present time, if there is anything at all in the suggestions that I have made; for we are as yet merely at the beginning of things. Prof. Robertson is responsible for the statement that of the twelve principal fruit products,

wheat, living animals, dressed meat, cheese, butter, eggs, lard, raw fruit, condensed milk, potatoes, poultry and game imported by Great Britain, Canada could readily supply thirty-three per cent., whereas at the present time she only makes a paltry contribution of seven per cent. Prof. Robertson's statement means, if it means anything at all, that the only thing that prevents the quadrupling of Canadian trade with Great Britain in these articles is the want of aggressive, systematic effort, and we must not forget that Great Britain is not our only market. This is the time to formulate the lines upon which our energy shall be expended. We will not build castles in the air, but I would like to point out that in some respects we are the most favored people upon earth. Not only are we by virtue of our geographical position in the very centre of the British Empire, but like the chosen people of old we have, too, our Balaams who come to curse and remain to bless. There was a time when the young men of this country went whining after the United States. They could hear nothing but the eagle's scream. They did not see the opportunities that lay before their eyes, and they forgot that God had placed them in this country to develop its resources. At that time President McKinley thought that he could clinch matters, and with a hostile tariff bring the people of Canada to their knees, to become hewers of wood and drawers of water for the United States. He did not know the stuff we are made of. He put us upon our mettle. With our backs to the wall, we set to work at once to find independent markets for our products and manufactures, and we set to work to perfect the machinery of our export trade, with the result that we are now upon our feet. The scales have fallen from our eyes. We know that we can be independent of the United States, and we know that our young men can find at home all the fortune that they want, for all we have to do to obtain riches, is to develop the potential wealth that lies at our feet. There was a time when England did not recognize the duties that she owed to her brothers in the Empire, when no difference was made by the masses of the English people between Canadians and the citizens of the United States, when they all were called Americans, and in the wider name Canadians were lost from sight. It was Paul Kruger who changed all that. The tumult and cheers which within the last few weeks have greeted our Canadian boys in the leading cities of Great Britain are a sign of the change of the attitude of English people towards Canada. These cheers have their counterpart in the world of business. To-day the business men in England are only too anxious to assist the Canadian people in developing trade within the empire. If sentiment goes for anything, the trend of trade and of capital from Great Britain will be to Canada in preference to the United States.

We must not neglect any market, but now is our opportunity to develop our Imperial trade. It rests with the practical business men of Canada to accomplish this by an aggressive system of co-operation in the development of Canadian trade throughout the British Empire.

Now gentlemen, I believe it is somewhat of a departure for this Association to speak on matters of this kind. I have always understood that the work of your convention was chiefly in the direction of protection or defence against bugs and against winds. I may be mistaken in this, but I would like to see this very important question fairly taken up by this Association, and I would like to see you take the first step to put into practical form the suggestions I have made to-day (Applause).

Mr. WHITNEY (Iroquois): Ever since coming to this meeting the subject of that paper has been upon my mind. We have heard two great difficulties spoken of—the correct method of packing fruit, honest packing, and the transportation question. I believe the suggestions as to the methods in vogue in California will solve the difficulty. It was my pleasure during the last Spring to spend some months there and I studied this question very closely, and the system practised in California met with my great approval, and I am glad to say that one part of our Dominion has already adopted it. British Columbia has the system in force to-day, and they are not behind the other parts of the Dominion in fruit raising. The only difficulty that I see in co-operative fruit selling is in regard to the different kinds of fruit that we would have to take to this exchange. We have winter fruit and summer fruit, and perhaps half-a-dozen kinds might be taken to the exchange in one week, to be packed and shipped. If that difficulty can be overcome I think there would be no other. These exchanges command the respect of all the growers. Every grower feels that he is being honestly treated, and without this confidence it would be impossible to carry it out. The method in operation in California is something like this:

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When the shipping and exchange managers hear that there is a chance for the shipment of a car or several cars of fruit, say oranges or lemons, they apportion this carload among all their patrons who are the growers. I have a brother-in-law there engaged in fruit raising. Once he received notice that he would be required to send in 50 boxes on a certain date. He prepared himself to do so, took the 50 boxes just as they were picked from the trees without any culling, simply put them in loosely in the boxes, and drove over to the exchange. They passed through a gentle inclined plane, and on each side of the fruit as it goes through there are revolving brushes that brush every particle of dust or dirt from the fruit. They pass all through another inclined plane, and girls stand on each side and make a selection, culling as the fruit passes along. Of course there might be more danger of bruising apples than oranges. They take out the very largest fruit and put it to one side as being of very little value. They take a uniform good-sized navel orange as their No. 1, and if there are no small ones they are selected and passed through another shute, and thus when they get to the other end they are all ready, uniform in size, and these are hurriedly packed in paper, and they know just how many oranges of a standard size will fill their box. These boxes are immediately taken and put in refrigerator cars, thus obviating the necessity of cold storage. In Grimsby or in my own home we would not need refrigerators locally if this system was carried out, because the fruit will be placed at once upon the cars, and shipped at once to the proper destination already bargained for. All the people throughout Ontario know what it means to cooperate in the matter of the cheese and butter industry, and we have not to educate them up to the advantages of co-operation. All we need is some action on the part of the leading fruit growers or business men to set this movement going, and I believe we must and will come to it. Our present system is very antiquated and cannot stand.

COLD STORAGE FOR FRUIT AND OTHER PRODUCTIONS.

BY HON. F. R. LATCHFORD, COMMISSIONER OF PUBLIC WORKS.

It may be expected that, after the somewhat depreciatory remarks of Mr. Heaton concerning politicians, I should premise my observations with an apology. I do not, however, intend to do so, because I do not think I am one of those who, after entering public life, cease by that fact to take interest in the general welfare. Such men are, I believe, not numerous in this Province. There are few who do not realize that additional duties are cast upon them when they are called from private life to a public position, and will not accordingly interest themselves all the more in everything that makes for the welfare of the people. (Hear, hear). That at least is my view. Accordingly, although I happen to be in the field of politics, I shall not make any apology on that account. The subject, stated on the programme is not quite that on which I thought to address you. It is true indeed that when invited, I said I would attempt to speak to you on cold storage, but I should prefer to speak of cold storage not as applied generally, but with special reference to the storage and transportation of tender fruits. There are many fruits that can be preserved and stored without what is known as cold storage, though I think that even hardy apples and pears could be improved by receiving considerably better attention during the shipment to the Old Country than they now receive. An instance was brought to my knowledge when in Montreal some time ago, wherein a large cargo of apples consigned to England had been heaped up in the warmest part of the vessel. The result was that the apples were almost completely destroyed. Now, attention should be paid to the requirements of trade by the steamship companies, so that such accidents—if accidents they can be called—should not occur.

I shall endeavor simply to deal with cold storage and transportation only, because the necessity for a proper and improved cold storage is all the greater according as the fruit becomes more perishable. The subject is not altogether a new one. I recollect reading in your very valuable report what was said by Prof. Saunders at Whitby in 1896, and it was evident that at that time he was saying all that could then be said about the cold storage and transportation of tender fruits. You will remember that he told you a large shipment of fruit had been made in cold storage in 1886 to the Indian and Colonial Exhibition at London, that they arrived in excellent condition, and that

some 2500 plates of our magnificent fruits were displayed, to the admiration of the English people. Up to the time he spoke, in an interval of ten years, the success of that shipment has not been repeated. Why it had not been repeated someone responsible must answer; the fact remains. Now, that shipment was made in compartments fitted up under Sir John Carling on two vessels sailing from the port of Montreal. It was my good fortune to have some acquaintance with the method under which those fruits were sent over, and since that time I have taken—though occupied in a profession which did not deal directly with this matter—a very deep interest indeed in the subject of cold storage. I am a fruit grower and a flower grower in a small way, and I have always had a deep love both for fruit and flowers, and as a matter which in my opinion may materially improve the conditions of a large portion of the people, I have a deep and abiding interest in the subject of cold storage. I believe that to the fruit growers of this country there is no subject of greater importance. Perhaps there is no subject on which enlightenment is more required. Since Prof. Saunders delivered his address, there has been a number of experiments. I have seen some of those experiments conducted in buildings which violated every principle of right construction. To give you a demonstration of the reason those experiments failed, I have brought with me and now exhibit to you a piece of decayed wood, and which was till it came into my possession a little over a year ago, part of the lining of a building constructed for the preservation of perishable products, a building erected at the Central Experimental Farm, Ottawa, where the highest scientific knowledge would be, one would think, available. The sample produced is no worse than was the greater part of the interior lining of this cold storage building. There is not the slightest doubt that this piece of board was, when it was put into that building perfectly sound. Now let me ask you a question. If a cold storage building can rot a pine board in a few years is it not perfectly obvious that such a building could not preserve tender or any other kind of fruits from decay? Decay is always with us. It is indeed but a process in the work of nature. We are striving to produce a somewhat different thing from that produced by nature when we raise such fruit as this which I hold in my hand (holding up a large apple). Nature's effort is directed not to the production of the envelope which we use, but to the production of the seed within. You well know that in its original condition the apple was little more than a mass of seed with a bright attractive covering which a bird or animal would seize upon and carry away and thereby disseminate the seed. The covering was useless after the seed matured except for the purpose of dissemination. Nature having perfected the seed proceeds by means of decay to set the seed free, so that the decay of fruit is, so to speak, a perfectly natural process, directed no doubt in many cases not only to preparing the means of dissemination, but also to providing a medium in which the seed can find some nourishment during the earlier stages of its development. While decay is a natural process, and it is not possible in many cases to prevent it wholly, we may be able to retard it, and we shall do that the more easily if we know the causes of decay. The causes of decay and decomposition in animal tissues have been very extensively studied, especially during recent years, and the revelations which that study has brought forth have wonderfully ameliorated the conditions of the human race. We all know why of old a slight surgical operation brought on great suffering and often death. To day, as the records of the recent war show, exceedingly severe wounds can be treated with success. This happy result has been brought about by the study of the causes of decomposition in animal tissues. We now know that in the air surrounding us there are at all times present the germs of organisms which assist in the process of decay, which cause decay. Speaking generally—and I do not wish to deliver an academic discourse on this subject—they may be reduced to three classes: the molds, with which you are all familiar; the yeasts, with some of which you are familiar; and bacteria. They are always with us and all three play an important part in the decomposition of fruit. Pasteur took a bunch of ripe grapes and by cultivating the yeast spores present upon it found that they produced ten or twelve different species. The germs of the molds are constantly in the air. You have only to expose a sliced apple in this room for a short time, in a high temperature and a little moist air, and you will see a large crop of molds rapidly developed on the surface. Now we have also the bacteria about which we hear so much in the latter days. Many of these are well known to be beneficial, but some play an active part in decomposing fruit. As soon as you bruise a fruit you first of all rupture the cells of which that fruit is made up—these little globules of protoplasm

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surrounded by a substance called cellulose—each holding its own little life, so to speak. When you rupture the cell you destroy the power of resistance which the cells had when perfect, and prepare a soil on which the ever present spores of molds and yeasts can grow, and bacteria increase and multiply in their own extraordinary way. But for these agencies of decomposition living tissues would not decay. In high altitudes where the air is dry, it has been found that there are few if any bacteria, few if any molds or yeasts present in the air. In Colorado for instance, you can expose meat in the open air, even at high temperatures, for a considerable period and it will not be tainted; you can expose fruit and no molds will grow upon them, no yeast will develop; the fruit will simply part with its moisture, owing to the dryness of the air, and become desiccated, as it is called, or dried up. Now, it has been established that the spores of yeasts and molds cannot develop below a temperature of 35 or 40 degrees. They cannot grow at low temperatures. Nor can bacteria multiply, though the low temperature will not kill them. They will be present; they are as I have said, always with us, and the only effect of a low temperature is to retard their development. The reason then, that a low temperature preserves fruit and other perishable products, is simply that it does not permit of the development of germs.

In producing low temperatures different means are employed. I do not intend to say much of the methods and systems employed to produce low temperatures. They are of many forms, and a great degree of mechanical perfection has been attained in many of them, and the highest scientific attainments have been directed to the production of low temperatures at comparatively small cost. What has received least attention is the application of the low temperatures so produced to the preserving of perishable products. The application has been least scientifically made where it should be made most scientifically. Not many months ago I saw in a ship in the port of Montreal, a compartment intended for the transportation of tender fruits. I could only compare it, as to fitness for such a purpose, to the ice hut of an Eskimo. You had cold all around the sides of that chamber and at the top, and there the system advertised as perfect began and ended. The one consideration thought of was the production of low temperature, and that I must say was attained in a remarkable way; but the fact that your shipments of fruit in such compartments have not been successful, of itself demonstrates that there was something wrong. Nor have the shipments of meat from Australia or New Zealand been very much better. It is frozen there in large quantities and sent frozen to England where it is defrosted and sold at a profit, but yet at a low price as compared with English mutton. There is a reason for this. I am not going to cite the opinion of an English grazier or an English butcher in regard to this meat, but I will give you a statement of the Agent General of New Zealand in England in an official report to his Government. This report is published in the New Zealand Journal of 1898, in the Appendix on page 17. After referring to the excellent quality of New Zealand mutton at the place of origin he says:—"I have eaten Merino mutton here (in London) which has been about as agreeable as a slice of red pine wood, the color of which it somewhat resembles." So that the shipment of frozen meat has not been a bewildering success, although so great is the demand for meat in the English market, and so cheaply can New Zealand mutton be sent there, and so cheaply can it be sold at a profit, that the poorer people buy it very largely. But still the meat does not arrive there in nearly as good a condition as I believe I can show you is possible.

In connection with cold storage, we can, I think, take a lesson from the men who have been studying bacteriology, from Pasteur down to the present time. Pasteur has shown that the most putrescent liquid will not decompose at all if sterilized in the first instance and afterward exposed only to pure air. When a bacteriologist wishes to procure a volume of pure air, the first thing he does is to filter the air at hand in such a way that all germs shall be eliminated from it. Is any such process open to us? Can we exclude from the chamber in which we are carrying fruit susceptible to these destructive agencies, or eliminate from the air within such a chamber these agents of decay? Now I answer that there are such means, and assert that they have not received proper attention, and as a consequence the shipments of quickly perishable fruit have not been a success.

Before referring to such means let me say that in the first place *cold storage must be economical*. If the cold storage does not cost you less than you get in the increased

value of your fruit it is of no advantage to you. You must have economical cold storage; storage that is cheap to construct and cheap to maintain. About insulation I will not speak more than to say that there you have the chief cost. The more money you expend properly on insulation, the better will be the result, but there is a way of securing good insulation cheaply, and that the Government of which I am a member has set before you in a pamphlet recently issued. The best medium of insulation is still or dead air. It is a difficult thing to obtain and keep, yet it can be obtained and kept, and it may be obtained and kept cheaply. The external air is usually of a much higher temperature than that at which you wish to carry your products. Now two proximate bodies, no matter what their temperatures are, are constantly exchanging heat. Ice itself has heat; it is not cold except by comparison with substances of higher temperature, we cannot get down to the degree of absolute cold with ice or even with refrigerating pipes. There is a certain elevation of temperature which they have above the point of absolute cold, and there is an exchange of temperature between the ice or other cooling body and the air outside. You are constantly losing by radiation and absorption of heat. There is a loss to the body of higher temperature outside. Insulation is necessary to prevent such loss, and as an inch of still air conducts heat about five times less than pine of the same thickness, still air should be used as a medium of insulation wherever possible. The plans when submitted provide for this. The sawdust filling shown is not as good a non-conductor as the air whose place it in part occupies, but its presence is necessary to keeping the air in its interstices still. The insulation you will notice does not immediately cover the ice, but is placed over the ceiling above the ice, in order that the ice itself shall be exposed for a purpose which I shall presently mention. There will be no greater loss by absorption than if the ice were immediately covered by the sawdust or some other good insulant while there will be an advantage which cannot be otherwise obtained.

Your structure must not only be cheap to construct but also cheap to maintain. You will remember that in old days when we were heating our houses more generally by means of hot-air furnaces than we are now, we took the air from outside the building, and had to heat it often from below zero up to say 70 deg., requiring necessarily a large expenditure of fuel. Today under the same system we take the air to be heated within our houses at say 50 deg., and have to heat it up through 20 deg., only, instead of through upward of 70°. A great saving of fuel is thereby attained. Now if you can get your air for cold storage purposes at pretty near the temperature you need and have to cool it only through say 10 deg., there will be a great economy in cost of maintaining a mechanical or chemical plant, or if you are using ice, a considerable saving of your ice. In a cold storage building recently built in a neighboring city they are now taking outside air at 60 or 70 deg.,—in summer it would be 85 or 110 deg.,—and cooling it down to 32; that is cooling it through 30 or 40 deg. I said to the superintendent, "Why don't you take your air in this cooling chamber and use it over again?" "Oh," he said, "it is impure, we could not do that; it is smelly, and it gets moist, and we could not do it. It would destroy everything we have." Perhaps it would, with his system, but if that air could be taken at a temperature at say 40 or 45 in the upper part of the chamber, purified and reduced to 35 deg., you would have to reduce it only through 5 or 10 deg., instead of through 30° or 40° thus materially economizing the cost of maintenance. *The air can be so purified, cooled and utilized.* We cannot do better than follow nature, and avail ourselves of her forces in material things at least. Now there is a great force present always with us in refrigerator chambers and everywhere else, the force of gravitation. That force can be used to great advantage in connection with cold storage. Wherever you have cooling pipes or ice you have also absorption of heat from the air and a consequent increase in the density of the air. Air being a mixture of gases, expands like gases, when under the influence of heat and the force of air so expanding is quite powerful, and may readily be directed and utilized. The air near the ice or pipes will fall, and falling it will push through or against any less dense body of air that may be in its way. It is manifest that to obtain the full effective force of the air so falling, its path should be made easy. Every obstacle lessens that force. It should be permitted to fall free, unopposed by any conflicting current. Such a current conflicting with the descending volume of cooled air may arise from the expansion of heated air which being of less specific gravity than air around it of lower temperature will rise. The downward current of cold air and the upward current of warm air must not conflict. If they should, we shall have available

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not the sum but the difference of the two forces. The difference is all that the most of the constructions at present in use have to promote circulation of air. This circulation is not to be sought as an end, but as a means to an end. Let us take the circulation which might readily be produced in this hall. The windows on my left are but slightly separated from the outer air on this winter day and the room is coldest on that side. Place on my right opposite those windows, a pair of steam radiators, and we shall have a very rapid circulation of air. The air on the window side, being colder, will fall to the floor, and flow like water across the floor from left to right, simultaneously the air over the radiators will expand and rise to the ceiling, and flow across it towards the windows.

If the windows extended along the whole of the left side of the hall and the radiators along the whole of the opposite side, there would be an even downward flow along the whole length of the wall on the one side, and an even upward flow along the whole length of the opposite wall. The volume of air falling on the one side and the volume rising on the other would not impede each other. Each would assist the other, and you would have a very rapid circulation of air, the more rapid according as the difference in temperature was greater between the two sides of the room. This circulation would exist were all openings into the room hermetically sealed. You will see from this how a strong draught may exist in a room even though no air currents come into it from without. You would have a rapid circulation of air in a room cool on one side and warm on the other, but that circulation of itself would be of no benefit. The air, though circulating rapidly, would not lose any of the impurities with which it is charged, but it would simply tend to distribute such impurities throughout the whole of the chamber. Circulation, then, for the mere sake of circulation is of no advantage. It is, however, of the utmost importance as a means to a most desirable end. That end is the purifying of the air within the room.

The impurities consist first of all of an excess of carbonic acid gas. Ordinarily this gas forms but an infinitesimally small portion of the air, yet on it all vegetation lives. The quantity present in the air is so trifling as to be discernible only with great difficulty; as Faber has so well said, if it were breathed away, or if the sea drank it all in, or would not give back again what it drinks, in a few short hours the flowers would be lying withered on the ground, the mighty forests would curl up their myriad leaves, show their white sides and fall. There would not be a blade of grass upon the earth.

I mention this not because the presence of this gas in small quantities is injurious, but to show you on what almost imperceptible chemistries the preservation depends.

In the ripening of fruits carbonic acid gas is constantly given off. In addition to the presence of this gas, we shall have the spores of the various decomposing agents to which I have referred, and probably bacteria themselves in an active state. Then we shall have something more. Within the chamber, as soon as you store things in it, there will be produced odors, a different odor from each article. Certain products will not only give off odors but absorb them. Milk and butter are well known to be readily susceptible to odors, and in some shipments in cold storage of eggs and apples, the eggs have been found to absorb the odors of the apples, and were consequently good neither as apples nor as eggs.

You know that water has a strong affinity for odors. If you place a glass of water in a bedroom over night, it will in the morning be unfit for use. In the interval it has absorbed foul gases from the room. Such gases are always present in the air in greater or less quantities, but they may be got rid of if you can bring them into contact with a body like water having the power of absorbing them. It is remarkable that the gases of which air is chiefly composed are but very slightly absorbed by water. A given volume of water will absorb but two-hundredths of its volume of nitrogen, and but about four-hundredths of oxygen. On the other hand, water will absorb one and three-quarter parts its volume of carbonic acid gas, about four and a half parts of its volume of sulphuretted hydrogen, and more than one thousand times its volume of ammoniacal gas. If therefore you can bring the air charged with deleterious gases in contact with water, the normal constituents of the air will not be themselves absorbed, while all the injurious gases will be. This, then, is one of our problems: How can we cause the whole of the air contained in a storage chamber, charged as it is with injurious odors and gases, to come into contact with a body which will absorb such odors and gases and allow the air to pass on freed from them?

There is another problem. In many cases the products stored contain a very large percentage of water some of which they are constantly giving up to the surrounding air. Fruits contain often as much as 90 per cent. of water; meats a lesser though still a large proportion. Moisture facilitates, as I have shown, the growth of bacteria, molds and yeasts. How shall we get rid of it? If you bring air into contact with a body of lower temperature, the moisture in the air will condense on the cooler body. This phenomenon is manifest at present on the windows of this hall. The moisture formed in large drops upon the glass has not, as you know, come from the outside. It has accumulated owing to the fact that the temperature of the glass is lower than the temperature of the air within the room. Here in the model car before you we have in the centre a body of ice, lower in temperature than the air in either end of the car. Let us now take advantage of the circulation which will result, if we permit it, from this difference in temperature. If we bring all the air in the car in contact with the ice we shall have the excess of moisture in that air condensed upon the ice. Another highly desirable result will follow. The surface of the ice is covered with water. The coat is a thin one, resulting from the melting of the ice and the condensation of the moisture in the air, but it is sufficient to absorb excesses of carbonic acid gas and other injurious gases which are present in the air, and so purify the air within the car. We could by means of fans force the air any way we please, but we have at hand ready for use the natural force of gravitation, to which I have referred, and the expansive force of vapors. Let us apply these forces rationally to the problems before us. The air in contact with the ice not only loses its moisture and its impure gases; it loses also its heat; the germs it contains are imprisoned on the liquid surface and carried off in the drip. The deeper the mass of ice through which the air falls, having regard always to the fact that its course must not be wholly obstructed, the greater will be the condensation of moisture, the more thorough will be the absorption of gases and odors, the greater the reduction of temperature, and the more complete the filtration from the air of all dust particles and germs that may be in suspension in it. If the ice chamber were closed at the bottom, the air could not pass out; it would remain in the chamber just as water would in a bucket. If you cut away the lower part of the bucket, the water will flow out, and will continue to flow if the bucket is replenished and the opening unobstructed. Here also when we make an opening in the bottom of the chamber, the air under the influence of the force of gravity will flow out into the storage chamber. It there comes under the influence of the warmer air present in the storage chamber, and the warm walls of the car or other building. It absorbs heat from its surroundings, expands and rises through the products stored in the chamber, or carried in the car or vessel. If no outlet were given it, it would simply accumulate until the pressure in the storage chamber would be equal to the pressure in the cooling chamber, when stagnation would result, with all the disadvantages which we are desirous of avoiding. If an opening is made into the ice chamber, the pressure of the expanding air in the storage chamber will be exerted in that direction, and as the air is cooled and falls away, a relative vacuum will be created in the upper part of the ice chamber which the air in the storage chamber will rush in to fill. The line followed in the storage chamber by the air in such a movement would be the old physical line of least resistance. The air flowing out at the bottom of the ice chamber would for most of its volume flow across the floor of the car to the end where, owing to the obstruction, that part of it which had not ascended under the influence of the heat it had taken up, would turn and flow back into the upper part of the ice chamber along what would be approximately a diagonal line from the lower angle of the storage chamber to the point of junction of the ice chamber and the ceiling. The air below that diagonal line would be in motion; the air above it would be almost at rest; it would be stagnant, holding all we wish to eliminate from it, and it would largely so remain. To put this part of the air in circulation, a false ceiling is placed in the car, as it may be in any storage chamber, extending from the duct leading into the ice chamber to within six or eight inches of the opposite end of the car. The air flowing into the ice chamber past one end of the false ceiling—which practically forms a duct along the whole roof of the car—induces a current of air in the duct, which gradually extending to the more distant end of the car, draws up the otherwise stagnant air. In small constructions the ceiling duct may be disregarded, but in cars and large buildings its usefulness cannot be over-estimated. By its means the air is made active throughout the whole of the storage chamber. There is rapid and thorough circulation from the

storage chamber through the stantly received. The process the air as raised their highest current of water forces. If you will have in use do not

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The refrigerator have tanks at top and bottom ly used. It only two doors it is easier to good for refrigeration you have at There would along the floor at one side of the centre, perhaps a duct as, if the air from the end together, obstructed opposite, you all refrigeration wards the ceiling air will und The effect is result known fruit in a refrigerator spoiled while the air flow temperature flows back inward, and which I have maintaining tages from

storage chamber through the ice. The air is dried and filtered every time it passes through the ice, and moisture and odors are absorbed and pass away. It is, however, constantly receiving accessions of foulness from whatever is carried in the storage chamber. The process must therefore be continuous to be of any use, and must cleanse the whole of the air as rapidly as possible. To effect this end, the forces available must be utilized to their highest power. If you bring the downward current of cold air into an ascending current of warm air, the power available will be simply the difference between the two forces. If you make the upward current co-operate with that which flows downward you will have the sum of the two forces. Strange as it may appear, many of the systems in use do not adopt this obviously correct principle.

Where the necessity arises for placing the cooling medium above the storage chamber,—and this may often be a matter of economy—the cold air may by means of proper flues be still delivered at the floor of the storage chamber, and the heated air taken out at the highest point. In such cases it is of course absolutely necessary to thoroughly insulate the ceiling, otherwise condensation will take place there, and the collected moisture will drop back on the goods stored and soon become the breeding ground of molds and slimy organisms such as are commonly seen in most of the cold storages in this country, and in most of the refrigerator cars in use. The car or storage chamber which is moist in any part is unfit for use. It is easily possible to construct our cold storage in such a way that there shall be no moisture in any place except the ice chamber, or when mechanical or chemical cold storage is used, on the freezing pipes.

I have during the last few years looked at a good many cold storage rooms in this Province, and I have been astonished at the want of thought manifested in their construction. Perhaps I should not be surprised in view of the imperfect systems in use on our railways.

I have here a model of a car invented by a Canadian, Mr. Hanrahan, who has led the way in scientific refrigeration, and who is, I am glad to notice, present with us to-day.

The refrigerator cars in common use are not built on the plan of this model. They have tanks at the ends made usually of galvanized iron. Some have wire netting at the top and bottom so as to promote circulation through the mixture of ice and salt commonly used. It is urged on behalf of such cars as against those built like the model, that only two doors—which are points of weakness in a car,—are used instead of four; that it is easier to transfer freight from one car to another while the old style cars are just as good for refrigerating purposes. Well, just consider the facts for a moment. Suppose you have at each end of a car just the construction you have in the centre of this model. There would be a downward flow of air at both ends and the two currents would flow inward along the floor towards the middle of the car. If you had a current of water falling down at one side of this room and another at the other, they would flow along the floor towards the centre, and the effect would be seen at once. You cannot see the air, and this, while perhaps a disadvantage in studying refrigeration, is in all other respects a great blessing, as, if the air were visible, all things else could not be seen. If then water was flowing from the ends of a car towards the centre, you would observe the two currents come together, obstruct each other, accumulate, and if the two currents were equal, as they are opposite, you would have rest and not motion. That is precisely what happens in nearly all refrigerator cars. The air in contact with the tanks is chilled and falls; it flows towards the centre from both ends; the two currents meet there and while some of the air will undoubtedly rise, a large portion of it will be impeded and stagnation ensues. The effect is that in the centre of the car there is often no circulation at all with the result known to many of you who have taken the trouble to look into a shipment of tender fruit in a refrigerator car only to find that all the fruit in the centre of the car had been spoiled while that close to the tanks might be in fairly good order. In the present car the air flows downward through the ice, outward towards both ends of the car where the temperature is highest, and there is an up current of warm air which rising to the ceiling flows back into the centre of the car. You have two volumes of air rotating rapidly inward, and bringing all the air in the storage chamber constantly under the influences which I have referred to as effected by the ice. There may be slight disadvantages in maintaining a car with four openings instead of two, just as a Pullman car has disadvantages from certain points of view over the ordinary passenger car; it costs more to build

and will carry fewer passengers, but it is built for a special purpose, and in a refrigerator car proper refrigeration should be the first consideration.

If you have good refrigerator cars you will not need to cool your fruit before shipment. The reason is obvious. How will you cool your fruit in the first place? You answer, by cold storage. But it is just as easy to have proper cold storage on wheels in the form of a car as to have it stationary in the form of your Grimsby building. If you have a proper car your fruit will be transported in good order to Winnipeg or the seaboard in the same time you now waste in cooling it in your stationary cold storages at Grimsby.

With proper care you can load all fruit as soon as it is picked. It may happen that it is not possible to get a car load at one time or place, or even the half of such a car as I now show you, and that storage will be required to keep the fruit until you obtain a sufficient quantity for shipment. The best way to attain this end is undoubtedly by such co-operation as Mr. Heaton referred to in his opening remarks, but as necessary preliminaries you must have those varieties of fruit which the consumer most desires, and you must injure them but as little as possible in picking, assorting and packing. Any injury to the fruit simply provides a soil on which the everpresent agencies of decay will grow and thrive.

What is the best packing and package for cold storage is largely a question of experiment. I hope a great deal of attention will be paid in the near future to experiments, to determine just what is the best way in which to pack fruit. I may tell you that theoretically, and not speaking from any practical experience, fruit should have a packing medium only sufficient to prevent it from being injured by or injuring another fruit. The packing should be porous, otherwise it will not permit the escape of gases which are generated in the fruit, and which are, I think, injurious to it and hasten decay. Your package for cold storage should be a package which will permit a circulation of air all through it. That is theoretical too, but I think experiments will prove the correctness of my statement. There is a disadvantage, however, about ventilated packages that I wish to call your attention to. It is that when the fruit is taken out of cold storage in a ventilated package and exposed to the ordinary air, the moisture in the air is condensed and remains upon the fruit. As the chilled air falls away, it is replaced by volume after volume of warmer air which also leaves its deposit of moisture and passes away, and the process of deposition goes on until the fruit attains the same temperature as the air. The consequence is that if you take an open package of fruit out of cold storage and expose it to the air it becomes in a very short time quite wet. Now, that is not from within the fruit; it is wholly from without, wholly a deposit of the moisture contained in the atmosphere, so that theoretically, and practically too—because it has been demonstrated—while fruit should have a ventilated package while in cold storage, it should, when brought out of cold storage, be placed in slide-closed packages, or by being placed in another box so that the increase in temperature of the fruit should come to it by absorption of heat through the box and not by direct contact with the air. Outside air at say 80 degrees will soon communicate its heat to the fruit, and the fruit may then be exposed and it cannot condense any moisture; it will be and remain perfectly dry. If you then have ventilated packages for cold storage you should either be able to close them when you take them out, or put them in closed receptacles until the fruit attains the same temperature as the air in which you desire to expose the fruit for sale.

Then, as I have said, you will require to co-operate one with another, and I know, speaking for the Government of the Province, that you will have its hearty co-operation, and, I believe, the co-operation of the Government at Ottawa. Then perhaps the two governments could co-operate, each helping in its own sphere the people as best it can. Last year we passed an Act at Toronto to assist any one or any body of men who wished to erect cold storages to the extent of one-fifth of their outlay up to \$2,500. That is some help, and we hope it will prove an incentive to cold storage.

The necessity of providing better transportation facilities should be brought strongly to the attention of the railway and steamship companies and the Ottawa Government, which is charged with trade and such matters. The whole chain of cold storage should be complete, from the grower with his cold storage at the point of production, through the car to the port of shipment, on the ocean and at points of distribution to consumers. Now two of those links are in charge of the Dominion Government—not wholly, because that government itself is dependent upon the car companies. If you are convinced that

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one car is better than another, then you should insist upon the railway companies providing that car. That is a matter of experiment with you. An old car with imperfect insulation has been constructed on the system which we think is a good one, and you can experiment with that car. It is not as good as it could be because the insulation of the car is not good, and unless you have good insulation your ice is going to waste away quickly. On shipboard the whole system must be changed. The system has been altered to some extent. You have not been told about it, and perhaps may not be, but the system was materially changed after the Hon. Mr. Dryden made a shipment to the Old Country. I told you of a ship in which I saw what should be called the Eskimo system adopted, which had exposed pipes all around the sides and on the ceiling. It operates much as an Eskimo igloo would. All the moisture contained in the air is condensed on the sides and ceiling. If they are very cold of course it is frozen there; if they are below 32°, as frequently happens, any moisture condensed drops back on the goods intended to be carried safely, and I have seen it so drop back in the port of Montreal. After the success of the trial shipment to which I have referred the ceiling pipes were cut off on the "Manchester Commerce"; no cold brine was allowed to circulate in such pipes and air ducts were formed by sheeting in the pipes on four sides of that chamber from near the floor to near the ceiling. The result was that there was a circulation near the walls and stagnation in the centre. Better results followed, but not nearly as good as if all the pipes had been combined and placed in a coil on one side of the room, separated from the storage proper by an insulated partition, not extending quite to the floor or ceiling and with a proper duct along the whole ceiling. You would then have considerable difference of temperature between one side of the room and the other, the circulation would be unimpeded and rapid and you would have the other results that I have mentioned.

I have occupied a great deal too much of your attention to-day. (Voices: "No, go on.") But I feel the seriousness and importance of the subject, and speaking as I do disconnectedly and without much order I fear I am becoming wearisome to you.

I might speak about the advantages which would come to us from an increase in our fruit trade. They have been dealt with and well dealt with here to-day, and I shall leave them to your consideration. I hope, however, that with the increased interest in cold storage, and the more scientific attention devoted to it, we shall soon be enabled to increase many fold our trade with the Old Land. There is a great market there, and with proper cold storage we can send to it our surplus product and receive a large return which is now lost to us. The greater the advantage to our people, the more will they be inclined to live in this bountiful and beautiful land. We have here, not only in this vicinity but throughout the whole of this province, large areas of excellent land which could be devoted to fruit culture, and which are not now devoted to it because the return is not what it might be. I look forward with confidence to a process of development of this country, of expansion in many lines, and especially in the production of fruit.

The Governments at Ottawa and Toronto are, I am sure, anxious to do everything that is possible to advance your interests. It has been stated here to-day that fruit growers must help themselves. That, I think, is the proper spirit, and governments, like Providence, are disposed to help those who so act. Speaking merely for the Government at Toronto, though I feel that I might give you a similar assurance on the part of the Government at Ottawa, I wish to say in conclusion that the fruit growers have our hearty sympathy, and will have our encouragement and assistance whenever and wherever possible.

AN EXPERT ON COLD STORAGE.

By MR. J. F. HANRAHAN, OTTAWA

When I came here to-day I did not expect to be called upon to say anything in connection with cold storage, but since taking hold of the cold storage for the Ontario Government I think I could give you a little practical information. When you are undertaking cold storage you must remember it is necessary to have everything completed in its entirety—just as it takes a hundred cents to make a dollar; ninety nine cents do not make a dollar. I have a question which I have submitted to Hon. Mr. Dryden. Hon.

Mr. Latchford, Dr. Mills, and the principal professors, and that question is this: Are the carbonic acid and other gases which are generated from fruit during the process reaching to a stage of putrefaction, beneficial or detrimental to that fruit? That is one of the questions I want to solve. Dr. Mills stated kindly to me that he was going to have Prof. Shuttleworth and Prof. Hutt solve the problem, and from what I understood I think we will soon have a definition of it. The next thing is this: In the *Globe* this morning I noticed that Dr. Saunders said yesterday that packing presented a problem that was not yet solved. Now, gentlemen, I have never taken any interest in fruit; my whole mind has been concentrated on cold storage. I have delved right down into its depths, and I conceived an idea, and I made a construction in accordance with that idea, and with that construction I made a test, and from that test I got a result; and if you get a result there is a cause for it. Why has this problem not been solved? You see that Dr. Saunders says that packing presented a problem that was not yet solved. How are we going to discover what is the most practicable method for carrying perishable goods to Europe in the best condition? That is one of the cents that goes to make the dollar. First you have to get a perfect system of cold storage—never mind mine, get the best. In the next place have the temperature of air in one chamber 35 deg., in another 40, in another 45, in another 50, and in another 55, if you want to ship different varieties of fruit as they come into season. Then at different stages of maturity, place some in deep packages, some in shallow packages, some in open packages, some in closed packages, some wholly wrapped in paper, some partially wrapped in paper, some with wool, and some with excelsior or any other means. In my estimation the whole system of handling fruit to-day is as crude as it was twenty years ago. By this experiment you will find out what is the greatest possible length of time that fruit will carry. I may say so far as that little system of mine is concerned, there is nothing like it on top of earth, because the ice is supplied in the construction so that we get the circulation by the unification of two pressures, of two extremes. Unless extremes exist, circulation cannot take place. I want to say here that I am not in politics, but the fruit growers of Ontario are under a deep debt of gratitude to the Hon. Jno. Dryden for the efforts he has made in their interests in relation to cold storage, and I know it—(Hear, hear, and applause)—and also to the Hon. F. R. Latchford. I want to say right here, I am not after this position just for the money that is in it, but honor to whom honor is due, and I know where Mr. Dryden antagonized some of the wealthiest men in this country in the interests of the fruit growers (hear, hear). I was requested to go down to Montreal and examine the cold storage on the "Manchester Commerce." There was a series of pipes all under the four walls and on the floor and ceiling. I came in the door, took a look around the chamber, Mr. Blue of the Manchester Ship Canal Company was there, and he said, "What do you think of this?" I said, "You can't get any circulation in this chamber." "Oh yes," he said "we can." I said, "I beg your pardon, that is an utter impossibility." So he wanted me to explain, and in the meantime he came out and took out a paper, like a lot of other people that think because they understand business that they understand what cold storage is. Well, they have got to take off their coats and discover it. I said to him, "Look here, do you see that building? Well, you might as well take that building and carry it on your shoulders as expect to get circulation in this chamber." The chief engineer was in and heard me make the remark, and he said, "Mr. Hanrahan you are right, if that door is closed there is no circulation after one hour." I said, "I thank you for your kindness in making the admission, but it isn't necessary for you to do it in order for me to know it." (Laughter.) Then I went to work and put up the construction. The idea of my construction is this, that the odors, moisture and gases must be forced out of the atmosphere so as to purify that atmosphere before it returns to the refrigerating chamber again. Although much has been said about the chain of cold storage and the results at the Paris Exposition, I could tell you some things that would surprise you about the consignment of fruits that were landed in Paris for exhibition. The absurdity of anyone trying to make you believe they have got the best chain of cold storage in the world. It is no better than they have any where else, in regard to the application of the cold. The means of the reduction of the temperature of the atmosphere is just the same. I want to tell you I was handicapped in the construction I put in the "Manchester Trader" because I had only so long to put it up, and I am sorry the construction cost as much money as it did; but necessity knows no law, the fruits were on the way, I had to

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get the construction put in, and it could not be done in Montreal in a minute. However, I did the best I could. I wanted to get the pipes placed so that each row of pipes would not be in an angling position, because air, like water, flows in the line of least resistance. I was obliged to go to work and make the plates of wood; I should have had them of iron. The construction was crude, but the system is all right. I was in Ottawa when I heard the "Manchester Commerce" had arrived in Montreal, and I went down and saw a gentleman who is closely allied with the party connected with the scheme of cold storage that has given such wonderful results, and I said to him, "I must go down and see the 'Manchester Commerce.'" "No," he says, she is loaded up and gone." But what did I find when I examined this cold storage, at the request of Mr. Dryden? The pipes were all exposed around the walls, and on the ceiling there was your condensing surface without the elimination of the odors, moistures and gases of the air. When I went back I found the whole of the walls covered with a sheeting of lumber in trying to use my ideas. The pipes were $2\frac{1}{2}$ inches in diameter; the space between the wall and the interior surface was about ten inches, and there were $7\frac{1}{2}$ inches on the sides by which the air could flow back to the chamber in the same manner as it left it. That is not all; they left a 10 inch flow at the bottom, and a 10 inch return at the top making a 10 inch outlet from the space where it was reduced; then they go to work and put a one inch pipe across with tight packages placed on top, thus only leaving about a one inch communication between the chamber thus forming it and the chamber where the products were placed.

In my opinion, it is important to get the odors, moisture and gases from the product as quickly as generated, while being carried in cold storage; but that cannot be done with a tight package. There must be a direct communication between each individual piece of fruit and the air.

Rev. Mr. BALL: It should not be wrapped.

Mr. HANRAHAN: That question is not yet solved. If the gases and odors generated from fruit during the process of putrefaction are detrimental to them, and you take each individual piece of fruit and not only wrap it in a piece of paper, but twist it up so as to hold the gases and then put it in a package such as shown here with a series of cells, the consequence will be that each piece of fruit will be submerged in its own gases. I have been working on this thing for quite a little while, and am working on it for pure satisfaction to show that the Hanrahan system has no equal. I am utilizing nature as far as it lies in my power, that is, the natural law that you can get circulation by pressure alone, or by suction alone, and that by the combination of pressure and suction, you utilize all nature's forces. If the fruit growers will do their part I will guarantee to do mine. Here is a package I have worked out in which, when the fruit is packed and the cover fastened on, there is a direct communication between every individual piece of fruit in the package and the external air, so as to allow the odors and gases being carried off with any surplus moisture the fruit may possess. When the packages are placed in the cold air, owing to the extreme warm air and the condensing surface, the air is colder than the surrounding atmosphere. You close the slides and it becomes a sealed package, and then you raise the temperature of the product by radiation rather than by the air coming in contact with it and condensing moisture on the surface of the product. I do not say this is perfect yet, but it is a stride towards it. I would like to see that problem solved. You can never get it solved on the lines you are now working on. You have yet to discover what is the most perfect way for packing. (Applause.)

Mr. McNEILL: I understand there is no communication between this car and the outside air.

Mr. HANRAHAN: No. The moment you form a communication between the external and the internal airs the principle will be just the same as if we were trying to heat this room and you open your windows on a cold day.

It is only owing to the extremes between two temperatures that proper circulation can be kept up, and the greater the extremes that exist between the two bodies the more rapid will be the circulation of the air. I take the ice tank and place it in the centre. Each end of the car is naturally a little warmer than the centre, because the intensity of the cold is the intense cold of the ice. Now, cold air descends and flows to the line of least resistance; hot air ascends according to natural law, and as the hot air ascends it carries off the odors, gases and moistures, and as the cold air descends in the

ice chamber it creates a suction as the hot air ascends with the moistures, odors and gases and the cold air returns purified from the refrigerating chamber.

Mr. E. D. SMITH: Do you not think that pipes filled with ice on the side of the room would answer the same purpose?

Mr. HANRAHAN: You have not a set of them in Ontario that is right to-day. Now it is a very strange thing to think of it—there are only eight degrees of extremes existing there. Say the temperature of that ice is 32 degrees, say the temperature of the chamber is 42 degrees; you can understand how sensitive it is, owing to the unification of those two pressures. If you take care of the atmosphere that surrounds the product, the product will take care of itself. Why is it that putrefaction does not set in? It is owing to the absence of odors, moisture and gases.

There is another question in reference to taking your fruits on board ship that is worthy of your most serious consideration, and that is in reference to the size of packages. You ought to have a standard size package. If you want a half bushel package, make it the same width and length of the bushel package and half the depth so as to lay right over the other one. When you want to make a quarter package, make it the same length, half the width, and the same height as the half bushel package—that gives you a peck. There should be on one side of each package a strip, and they ought to be kept apart. I had great trouble last summer with the shipment at Montreal on account of the various sizes of packages. Another thing that came before me, and that I had a little row about in Montreal was the rough way in which the packages of fruit was handled. Somebody is to blame and the fruit growers should adopt the proper means for the handling of their fruits. The limit for the carrying of some fruit is say five days. Well, what will be the consequence if you carry it six? Supposing the greatest length of time a certain kind of fruit can be carried under the most favorable conditions is ten days, then do not try to carry it eleven.

Mr. GASTON: How much ice does that car take?

Mr. HANRAHAN: I do not know in regard to the consumption of ice in that car I fitted up in Montreal. It was G. T. R. insulation, but it was the Wick system, Mr. Dryden had quite a fight to get the work done. I will build a thousand of those cars and put in say four tons of ice in each, and, if the fruit is packed in any kind of reasonable weather, I will guarantee to run those cars five days without re-icing.

The SECRETARY: Should that ice chamber be completely filled?

Mr. HANRAHAN: It depends upon the distance you want to carry it. Another point Hon. Mr. Latchford made was a very good one, about cooling the fruit on board the car. I have seen an absurdity in pamphlets and bulletins on cold storage about chilling your fruit before you ship it. The longer you hold it in cold storage before shipping the longer you are from getting it to the market, and the greater the detriment to your fruit before you get it into the market.

E. D. SMITH: You cannot bring the temperature of fruit down to 35 or 40 degrees with that car.

Mr. HANRAHAN: It is not a question of temperature at all; it is a question of eliminating the odors, moisture and gases from the air; the consequence is that the temperature is gradually going down.

Mr. E. D. SMITH: It is too gradual, that is the trouble.

Mr. HANRAHAN: Oh, no; if you will only get those problems solved—find out the proper method of packing fruits, and also find out whether carbonic acid gas or other gases are beneficial or detrimental to fruit, I will take care of the cold storage.

Mr. MCNEILL: We find when we put our fruit in a car at once when the temperature is about 90 degrees that we have to use from two to three tons of ice in order to cool the car down, then we re-ice it before we send it and it is all right.

Mr. HANRAHAN: You will have to do that under any conditions. You get right back to the old point that you cannot get something out of nothing; it does not matter where you get it, you have to pay so much for getting it.

Mr. MCKINNON: I think there is one little practical difficulty that Mr. Hanrahan does not understand, not being a fruit grower. It is this, that we cannot pick all our fruit to fill the car in one day and put it on board the car at once and send it away. It takes three or four days for us to fill a car, sometimes a week, with that selected fruit which it is necessary to send to England which requires such careful packing, although

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we can easily fill a car of ordinary fruit in one day. Now, we cannot always depend upon the car being there just when we want it. That is the first difficulty. The second is that if the car is there we have to pay a pretty high sum for the delay of the car for a whole week ; so that in practice it is well to have a cooling chamber at the point of shipment, or what is very much better, at the point of packing. I think it is better that the fruit should be chilled to a certain degree before it is even packed. I think that it packs with much less risk of damage if it is chilled a little before packing, and then having been chilled properly I quite agree with Mr. Hanrahan that then it may be put on his car without any cold storage at the point of shipment.

Mr. A. H. PETTIT : It is a large expense to build cold storages all over the country, and it would pay those sections where the fruit was being shipped to pay the charges on a car standing if it could be secured for that locality ; it would be cheaper than cold storage.

Mr. MCKINNON : I doubt if it would ; it would not be so certain.

Mr. A. H. PETTIT : I hope we won't be bothered in future as we were this year by having a properly fitted steamer only once in three or four weeks.

Mr. HANRAHAN : That shows the necessity of having such a steamer once a week.

Mr. A. H. PETTIT : It appears that this gentleman has spent a lifetime in developing this very valuable improvement in the cold storage system, and I move a most hearty vote of thanks to Mr. Hanrahan for his most excellent services along the line of cold storage, particularly for his able services in this line in the horticultural interests of the country.

Rev. Mr. ANDREWS seconded the motion, which was carried unanimously amid applause, and tendered to Mr. Hanrahan, who in reply said : " I will promise you that if you people will do your part I will do mine." (Hear, hear.)

ADDRESS BY MR. J. F. OLARKE, PRINCE EDWARD ISLAND.

In regard to our varieties of fruit, I may say Alexander and Duchess of Oldenburg have made an excellent success in Prince Edward Island. I spent four years in the Annapolis Valley and enjoyed being there very much, and got pretty well acquainted with fruit and fruit men there, and I felt that Prince Edward Island was not doing enough in fruit growing, and on my return I talked to the farmers there. There were fruit growers in Prince Edward Island long before I was born, and one gentleman, Mr. Cairns, came there from Scotland about 80 years ago, and you will sometimes hear of the Cairns apple, which he brought from Scotland. It is a very good apple, and looks something like the Ben Davis. There is something about your fruit here that I notice that I do not know how to describe ; it is smoother and rounder than our fruit. We grow the Ben Davis, but it is very oblong in shape ; here you have them comparatively round, and the ribs don't show up in your Tallman Sweets. Your Mann looks like what we call the French Pippin.

REPORT OF COMMITTEE ON SAN JOSE SCALE.

In the opinion of your committee, a serious mistake was made by the large number of owners of infested orchards who offered determined opposition to the carrying out of the original intention of the act, and that if public opinion had supported the Minister in his efforts the scale to-day would be almost if not entirely exterminated. We desire also to place on record our appreciation of the efforts of Hon. John Dryden in behalf of the fruit industry of this Province. We would now recommend :

1. That a system of inspection be carried on in all suspected districts, with a limited number of suitable assistants.
2. That every grower in suspected districts be required to inspect his own trees during the months of November and December in each year, and to report to the inspector

not later than the 1st day of January following, on suitable blank forms to be furnished, that the work had been carefully performed, together with a statement of the condition of the orchard at the time of inspection.

3. That, as the work of treatment is still in an experimental stage, the Government should make suitable material, both whale-oil soap and crude petroleum, available to the people on the same terms as supplied to growers last year.

4. That in isolated sections where the scale is found to a very limited extent, the treatment of the trees be carried on by and at the expense of the Government, under the direction of the inspector.

5. That, with regard to nursery stock, the most careful measures be continued to properly protect the purchaser from infestation from this source, and to this end all fumigation be done under the supervision of the Government, and official certificates be issued to accompany each shipment.

M. PETTIT, Chairman.

Mr. MURRAY PETTIT: I will move that this report be adopted as read.

Mr. CASTON seconded the motion, which was carried.

The SECRETARY: I would like to move that the same committee be continued during this coming year, because this insect is gradually increasing upon us and I am sure that the work of the committee is just as necessary for the year to come as it has been in the year past. Mr. SCARFF seconded the motion, which was carried.

A. H. PETTIT: There is one point that I think might be well considered in connection with that report. There was a strong opposition in many parts of the Province where the scale was bad. I think some members of that committee should come from that section of the country. They would give strength to the representation to the Government. Those who have changed their minds and are now in favor of this legislation should be on the committee.

The following were appointed as a committee for the ensuing year: M. Pettit, R. Thompson, G. E. Fisher, E. Morris, Wm. M. Orr, W. H. Bunting, John Wigle, Major Hiscott.

Professor MACOUN: I wish to draw attention to these navel oranges that were grown in the open air in half barrels by Mr. Cameron of Niagara Falls Park, and he says they equal any oranges in the market. He also sends some lemons which are very fine.

The SECRETARY read a letter of explanation from Mr. Roderick Cameron, Queen Victoria Park, Niagara Falls.

Professor MACOUN: I think we should all take an opportunity of tasting these oranges before the meeting closes. I should also like to call your attention to the very fine specimens of Keifer and Idaho pears the President has brought here. They are extraordinary. He has also brought some fine specimens of quinces and peaches, the peaches grown by Mr. Morris. He has also brought some fine Vergennes Grapes.

The Secretary read a letter from E. E. Wartman, Kingston, in reference to an apple box providing for convenient inspection.

SIR,—I express you to-day one of my Patent Fruit boxes. This miniature size is not a practical size, I got it made for you to kindly put in a prominent place. The grade of fruit determines the number of trays. I claim this is the quickest inspected fruit case in America. Fruit may be removed and replaced in ten (10) seconds. The King apples in this case are not shown as superior, only they are three inch standard grade.

E. H. WARTMAN,
Kingston, Ont.

FORESTRY FOR FARMERS AND FRUIT-GROWERS.

PROF. H. L. HUTT, ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONT.

There is perhaps no subject at the present time which is more deserving of attention by the farmers and fruit-growers of this country than that of forestry, and unless we arouse ourselves and give it that attention which its importance demands, we shall be compelled to suffer more and more severely for our negligence.

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The forestry problem which our fathers and grandfathers, the earlier settlers of this country, had to face was quite different from that which faces us to-day. They found the land thickly covered with forest and watered by numerous streams. The question with them was how quickest to get rid of the trees to make a clearance for the growing of crops. With axe and fire clearances were made. Year by year they have widened, until now the country is nearly all clearance, and it is only here and there that a bit of the original forest is to be seen. And what has become of the numerous brooks and streams? The clear running brooks of those summers are now our dry gullies down which the muddy water rushes for a few weeks in the freshets of spring.

But let us look deeper and see what else has attended this undue removal of the forest, this stripping mother earth of her natural covering. Where has gone the fertility which produced the crops and bountiful harvests of those days when more than half the land was in forest? Some of it no doubt has been carried away in the crops sold off the farms; but has not the greater part of it been washed away in the floods of spring and been carried out into the rivers and harbours where the Government annually spends thousands of dollars in dredging it out of places where it impedes navigation.

Why have we not the rains and showers which then so frequently watered the crops and pastures, while now the drouths of summer seem each year more severe and prolonged? This is becoming a most serious question. Why the increasing extremes in our climate, the more severe heat of our summers and the more biting cold of our winters, this loss of fertility, of showers, of shade, and of shelter, has it not been largely brought about by the loss of our forests.

Why these annual floods, which in spring now threaten destruction to both life and property in so many parts of the Province? Right here in Brantford, besides the great losses which have occurred from time to time, over \$100,000 have had to be expended on works for flood protection alone. Is not all this directly traceable to the removal of forests?

Why these cyclones and tornadoes supposed to belong only to the prairies, but which are now becoming all too common in their visits? Our unseasonable frosts, and floods, and drouths and cyclones are they not traceable largely to the undue removal of the forests? We shall not take time to enter into an explanation of the reasons for the existing state of affairs, but is it not time we began to arouse ourselves to the importance of this question?

In order to maintain conditions most favorable to agricultural and horticultural prosperity, there must be a due proportion between field and forest, and at least twenty or twenty-five per cent of the country should be in woodland. In some European countries the people, and the Government back up the people, have deemed it wise to maintain a much larger proportion than this. In Germany 26 per cent. and in Austria 33 per cent. of the land is reserved in forest. How much attention have we given to the maintaining of forests in Ontario?

The representative of this riding, while speaking in the Legislature last year upon the causes which were responsible for the annual floods here, drew attention to the scanty proportion of woodland in some of the central counties which help to swell the floods of the Grand River. In Haldimand the proportion of woodland is only 16%, in Waterloo 12%, in Oxford and Perth 10%, in Wellington and Wentworth only 9%, and in Brant County only 7%; and it is said that in some of the southern counties the proportion is only 5%. Is not this an alarming state of affairs?

The forestry problem with which we in this generation have to deal, therefore, is how can we most quickly re-forest from 10 to 20 per cent. of our country, so as to restore conditions to a proper equilibrium. It would have been much easier and better had we given attention to this at the proper time, and not allowed the removal of forests to go beyond the point of safety. But now, when the harm has been done, and we are all now more or less responsible for it, does it not become the duty of every landowner to look to his acres to see what he is doing in this respect? For every five acres he owns, has he one acre of woodland? To reduce the question of forestry to such figures may appear somewhat unreasonable, but how else is the proportion to be kept up unless every man is willing to do his share? It is not at all unlikely that the man who has all his land under cultivation would be reluctant to give up the immediate cropping of such land for the growing of trees from which he could not expect much return for years to come. But

it is this short-sighted policy of thinking only of the present, regardless of the future, that has robbed us of the forests and brought about the present unfortunate condition of affairs, and unless we can adopt a more unselfish policy, looking to the welfare of posterity, what is to become of those who are to follow us? We in this generation cannot afford to share the spirit of that son of Erin, who declared he would leave nothing to posterity because posterity left nothing to him.

In considering the question of reforestation, it is natural to suppose that the less valuable lands should be the first to be reforested. The steep hillsides and rocky lands, the river banks, lake shores and swampy lands, the gravelly knolls and waste lands, which should never have been stripped to bareness, should all be again covered with trees as soon as possible. Such lands kept under forest might be made to yield a good annual profit, besides increasing the yield and enhancing the value of the adjoining lands; but the reforestation should not stop at the waste lands. Shall he who has all good land go on chopping every acre of it and leave his less fortunate neighbor, who has a lot of poor land, all the reforestation to do? In justice to the community and to posterity every man should do his share in this respect, whether his land be valuable or not. Just here is one of the greatest difficulties in the way of reforestation. We of this generation are more concerned about present self interests than those of posterity or the community at large, and I fear that, unless landowners throughout the country can be made to see the value of reforestation as a profitable investment, it will be a long time before much progress will be made.

The profitable side of the subject, however, is one which gives more and more encouragement the more it is studied. It is quite true that no immediate returns can be expected from newly-started forest plantation, but the investment is a safe one, and the value of the plantation increases each year.

The value of belts of timber, in the shape of wind-breaks and shelter-belts, which should be planted to protect the crops and buildings of every farm, can hardly be over-estimated; and these, when once started, soon grow into value when given a little care at the start. But in addition to its value in this respect, the woodland may be made to yield a good profit from the timber which may be cut out without injuring the value of the forest in the least. The forest, in fact, should be looked upon as a perennial crop, which can be made to yield a good profit with no more labor expended upon it than is required in thinning and harvesting the timber.

I have felt this is one of the important questions that we in Ontario must give some attention to, and unless we can get down to business and make a better showing in this older part of the country we will have to pay dearly for our neglect. Perhaps it is not a question for the Government to deal with. They are doing a good deal in the way of forestry reserves in the newer parts, and this question of re-foresting the older parts is a question which the people themselves will have to deal with. We need more public sentiment in favor of it. I think that when people see the necessity of it they will soon get proper ways of going at the work. I have asked a good many questions in the paper, more than I have answered. I think it would be advisable at some of our meetings to take up this question more fully and see what could be done in the way of more practical methods as to how re-foresting could be started in the older parts of our Province.

Mr. WHITNEY: Can you tell us how they do in Germany? They carry out forestry there very thoroughly.

Prof. HUTT: The forestry question in Germany is one that is carried on by the Government under military control. The forest lands there are looked on as a national property, and every bit of land that is not used under crop in some way is kept under forest, and these forests are carefully cared for, the trees are harvested, none of them are allowed to waste. The trees are cut up, right to the small branches, so that there is hardly anything left of it, and every bit of this wood has value, and there is a revenue derived from it. They look upon a forest there as something valuable which must be protected and preserved. In France, where they have not nearly as much wood as they have in Germany, they have very stringent laws regarding the cutting off or removal of forests. No wood is allowed to be cut without permission; a man may not even go out in his wood lot and cut down trees without permission, and he may be prohibited from cutting those trees if it is considered that it would be a waste to remove them. If they are on the hillside where they might cause the washing away of land, or needed for any other purpose that they consider desirable, they can be prohibited from cutting them down. I do not

think it would be better to give the Province planted out, a crop from it, and the revenue from it would add to the income there would be a natural timber early wheat

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think it would be best for us to have such stringent laws here, but I think it would be better to give more attention to the planting out of shelter belts. In the older parts of the Province every farm should have its shelter belt, a good wide belt of mixed timber planted out, a number of the more valuable trees along with them, and these looked on as a crop from which the farmer gets his winter wood, and probably in time get a good revenue from it. It is surprising how some of these trees grow into value for wood, and they would add greatly to the value of the adjoining property. In the severe winter two years ago there were many cases where crops were destroyed away from the natural forest or natural timber or shelter belts, while right in the lee of the timber belt the crop, particularly wheat crop, was good.

Mr. SHERRINGTON: What kind of timber would you recommend for planting?

Prof. HUTT: I think there should be a good variety. I would take first some valuable hard wood, take the black walnut and oak, hickory, some of those nut trees, and then follow with some more rapid-growing trees as a third crop. Take the box alder, a very rapid growing tree, to shade, and you want a grand shade to force up the other trees. Then as soon as the ground is covered with trees the inferior trees should be thinned out, first to get a mixture of the more valuable woods, ash, maple, elm, which have now great value on account of their wood. One thing about it is that the value of wood is constantly on the increase. The price of timber is constantly increasing, on account of the great scarcity of it, and I think there will be very little danger of overdoing the thing in the way of reforesting.

The PRESIDENT: How is the reforesting done, by seeding or planting?

Prof. HUTT: By both. I think some of these trees are best grown right from the nut; oak, walnut, hickory, and trees of that kind which have a large tap root, are better from the seed being sown. Then other trees which are not supposed to be so valuable might be transplanted, just the small trees put in, just about a year old, and then dibble them in; they can be planted very quickly and very cheaply. Of course many have been grown directly from the seed, but they are better to have some of those nursery trees give them a start.

The PRESIDENT: Is there a difficulty in planting young trees in an old forest where there are some old trees, or is it an advantage to grow alone?

Prof. HUTT: There is a big difference in the different classes of trees. Some trees will stand shade, others will not. Trees not requiring shade will of course not thrive so well in a large forest, while the beach will stand any amount of shade.

Mr. SHERRINGTON: In the case of white ash, suppose it attained a growth of six inches in diameter and was then cut, would it then reforest itself, or throw up suckers again and go on?

The PRESIDENT: Yes, the ash will.

Mr. SHERRINGTON: A gentleman in our neighborhood has put out about an acre of ash trees this fall, and he is going to reforest about 100 acres, but he sowed the white ash seed; he is going to leave them until they grow up thick, and will leave them until they get as thick as spokes for buggies and keep the suckers down, and there is a demand now for about 6 inch diameter stock, and 6 feet long, which sells at 50 cents a foot. We have another gentleman, Mr. Shaw, Q. C., who planted a belt of black walnut about eighteen years ago, planting the nuts, and now he has walnut trees 30 to 40 feet high, and about 8 inches in diameter.

The PRESIDENT: That means a growth of nearly half an inch a year.

Mr. SHERRINGTON: Yes. They are doing well and making a very satisfactory growth and have been bearing nuts for some years.

Mr. E. D. SMITH: This is a most important subject, but one feature of it ought not to be overlooked, that is to select a soil suitable for the trees. (Hear, hear.) When I was young I was very enthusiastic about reforesting some land, and was planting it rather for profit, and I planted about five acres with walnuts, 8 feet apart each way, and I kept it there for about seven or eight years, and finally got discouraged and had to tear them out. They would not grow as the land was not suitable for walnuts; which require a deep dry soil, mountain side or the foot of a mountain where it is deep and rich, while this land was thin and poor. My idea was to select the least valuable land for reforesting, but in this case it was a failure. No doubt it would have been all right if I had selected the right kind of tree for that soil.

The PRESIDENT : Had you a good surface soil ?

Mr. E. D. SMITH : Yes, fairly ; it was not deep.

Mr. SHERRINGTON : This soil where those walnuts are that I speak about in our neighborhood is a pretty strong clay.

The PRESIDENT : Has it been farmed for years ?

Mr. SHERRINGTON : Yes, just on the border of the corporation of the town. They were cultivated right along.

The PRESIDENT : Was there any fertilizing ?

Mr. SHERRINGTON : I could not say. I presume there was, for anything he does he does it right.

Mr. PICKETT : What distances did he plant them ?

Mr. SHERRINGTON : There is a double row, I should say the distance would be about 5' to 6' ; they are not closer than that ; I never measured the distance. It is right along the west edge of his orchard ; he has seventeen acres of an orchard.

Mr. WHITNEY : Would it not be well to pay a little more attention to this subject of reforestry in the " Horticulturist ?" It is more important than we think of just now. I intend to write up the subject in my own paper, and do all I can in our eastern part.

Mr. G. C. CASTON : On the north side of an orchard about five miles north of where I live there is a row of black walnuts, the largest of them is about 8 or 9 inches in diameter. I think there are eight or nine of them in a row. It is a rather bleak place, and they are as thrifty and healthy as can be, and seem to be growing as well as trees can grow. The walnut was not found anywhere within 40 miles south of that, but this is growing there and doing well. This question of forestry is vital to this country. In our section we have had more wells go dry this summer than ever I knew before, and we have streams that once drove mills which are entirely dry now. We lose the moisture furnished by capillary attraction by not having a surface of green leaves ; we are getting too much like the prairie. We will have to turn our attention to forestry in this country. The lack of moisture is due chiefly to the want of trees. If we knew, as fruit growers and farmers, what we lose from lack of moisture, we would hardly believe it. We ought to make a start along this line of reforestry. In the northern sections there are a good many counties that have strips of land called waste land. The lumbermen bought that land with timber on it. They then took the timber off ; but it did not pay taxes. I believe it would be advisable for the Government to take that land and reforest it, because it is not good for agricultural purposes.

The PRESIDENT : Is there any growth on it ?

Mr. CASTON : No, not to amount to anything. Cattle run over it ; it is a kind of free pasture. If that were covered with some of the economic kinds of timber it would serve a three-fold purpose : it would help to retain the moisture, it would ameliorate the climate, and supply fuel for years to come.

The PRESIDENT : If the cattle had been restrained would not that all have been reforested naturally ?

Mr. CASTON : In spite of the cattle some land has covered itself with pine and poplar. Poplar is a very fast growing wood and can be used for making one kind of belt, but unfortunately the second-growth pine, when they get big enough for a belt timber, are cut off by the lumbermen. A few years ago the Government passed a statute that any person planting a tree along the road would be allowed 25 cents for each tree, in commutation of their statute labor, but the tree had to be three years planted, a living and healthy tree. There has been a great deal more tree planting along the roadside of late years than formerly. The Government have turned their attention now to reforestry in some wild tracts of land in the northern district, and with a good deal of success, but we ought to turn to it in the older sections. We should have the land growing something, if it is only melons, and not lying barren.

Mr. RICE : Nature had made seeds in such a way that they will seed themselves. For instance, ash seed is made with a wing to it, and a sharp point, and it is sure to strike on that sharp point and will pierce the moss, or the grass, and plant itself. There is no great knack in planting White Ash seed, and so with the maples. The seed of the Soft Maple is very large, and often that maple will grow as fast as the poplar or the cotton wood. You plant it out and it will grow two or three feet the first season, and the second season be five or six feet high. That is what we call the Dark Stem Soft Maple. I

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got the seedlings from Nebraska. I find they stand our climate better. In Port Huron we are troubled about our shade trees ; our native Hard Maple does not stand our climate, and even the Soft Maple is subject to the borer so much that it is very little use to us, and this western maple I got stands the drought better than any of our native maples and it grows so rapidly that trees I planted twelve years ago are now twelve inches in diameter and forty feet high. Now if we would scatter these seeds in our woods, nature will take care of them. They can be flung around and as soon as they strike they work right down through the grass

Mr. SHERRINGTON : What is the difference between White Ash and Rim Ash ?

Mr. RICE : I do not know any difference at all. I do know that the White Ash makes a splendid tree, and they run up so fast that they make a fine growth. Since I read my paper, a gentleman, about seventy years old, said to me that he wanted to plant ten acres next spring of black walnuts, saying he had the nuts all saved ready. I told him to spread them on the ground and cover them over enough to keep them moist the rest of the winter and then plant them next spring. In protecting nuts, imitate nature just as near as you can. Nature will drop those in the leaves ; scatter the leaves over and do just exactly as you think nature would. Spread them around the ground, scatter a few leaves over them, and leave them there till the spring. In planting sweet chestnuts, get the nuts from trees grown in the north and they will produce hardier and better trees. The native chestnuts grown on your hillsides here may be cut off and they will sprout again like the catalpa, and you will have a perpetual forest after you get chestnuts once started, as long as you keep the cattle out of them. The great key-note of starting forests is to keep the cattle out and keep the leaves on the ground. Also keep your fires out of the woods. If you observe these rules you need not trouble but what you will have a perpetual forest. That system of forest renewal was established, the Bible scholars say, about 6,000 or 8,000 years ago, and it has worked well so far. The forest has been renewed ages after ages, and keeps right on. We had good forests when we came here but we are tempted to disturb nature and so we are losing our forests. Here is a board from a Carolina poplar tree that is eight years old, and here is a board out of a tree seven years old.

Mr. CASTON : That is like Lombardy Poplar.

Mr. RICE : No, that is a great deal better than Lombardy Poplar. You will find one thing peculiar about this lumber, it will work very thin, and you may pull a little strip off it and you cannot break it in your fingers, it is so tough.

Mr. CASTON : Is it as hard to get rid of as the Lombardy Poplar ?

Mr. RICE : Nobody wants to get rid of it.

Mr. CASTON : Lombardy Poplar is as big a pest as the Canadian Thistle.

Mr. RICE : It is just how you look at it. I always protect the Canadian Thistle.

The PRESIDENT : So do I.

Mr. RICE : If I was going to buy a farm and one was covered with Canadian Thistles as high as my head and so thick that a rat could not get through it, and the other was clean, I would take the Canadian Thistle farm every time by all means.

The PRESIDENT : So would I.

Mr. CASTON : You could never in two generations get the fertility back again if you have Lombardy Poplars.

Mr. RICE : There is no trouble at all.

Mr. SHUTTLEWORTH : How do you get rid of the thistles ?

Mr. RICE : There is one man up in our section that has the nicest way to get rid of them that I know of. He fall plows the ground, then drags it once or twice during the spring and gets an immense growth on it, then in June plows them under, and sows to buckwheat, and rolls them down as flat and solid as he can, and he gets an immense full growth of buckwheat, and the next year he has got good ground for any crop, and he has no thistles.

The PRESIDENT called attention to the Hairy Vetch which grows ten feet in length, and which was being tested this year as a cover crop.

REPORT OF THE EXECUTIVE COMMITTEE.

In presenting the Report of the Executive Committee we would like to call attention to the constant growth and development of our work.

In the year 1859 this Association was organized, and in 1868, when it was organized under the Agriculture and Arts Act, it numbered 242. In 1886 it numbered 1,652, and to-day it numbers 4,500 paid members.

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The cost of publishing our journal is constantly increasing, and must do so if we are to keep pace with the times. This year it has cost us about \$2,500. You will notice that we have printed regularly 48 pages and cover which, with the increased number of pages, makes a very material difference in the printing bill and the amount of matter published. And we have a notice that there will be an advance in the cost of the paper for 1901 of \$17.00 a month, or \$204 per annum.

Another heavy expenditure is in connection with our affiliated societies which, in return, are a great source of strength. We have now over fifty of these societies in affiliation with us, and very soon we shall probably have all the horticultural societies in the province with us. So far we have helped these societies very materially by sending a lecturer once a year to address them on a flower or fruit topic—a system which keeps these societies in touch with us, and at the same time educates the public. The expense of these lectures is between \$200 and \$300 per year, and is increasing annually. Indeed, to do this work as it should be done, an expert should be employed. We would advise, in view of these new undertakings, that we ask the Department of Agriculture to make our grant for 1901 \$2,500 instead of \$1,800. We have not for many years made any such request, and we are sure that now the time is opportune for such a request in order that our work may be carried forward as effectively as possible.

The SECRETARY: I would move that this Association endorse the report of the Executive and Directorate. RICHARD

A. M. SMITH seconded the motion, which was put and carried.

GARDEN FAVORITES.

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

As I presume that the ladies, who are to follow, will take up the subject from the aesthetic standpoint, I will confine my remarks principally to the cold and practical aspect of the question relating to growing flowers, and also bring before you what we consider the best flowers to grow. In arranging our flower garden we had in view the keeping up a succession of bloom from early spring till late autumn. By adopting good rotation, as it were, you can have a splendid show of bloom from the latter part of April, in fact from the middle of April, until frost comes in the autumn. In arranging this garden I divided the classes of plants into spring flowers, bulbs, annuals, perennials, and in some cases dwarfed flower shrubs. I may say that perennials in this case included the lilies and irises. By getting a proper collection of bulbs in the autumn you may have a selection of fine bloom from the middle of April until the latter part of May. There are so many beautiful varieties of narcissus that it is surprising that more people do not get some of the better sorts. We very often get good results from the mixed bulbs, but you will get far better results from named varieties, because in this way you can arrange your garden so as to get the best effect and also be able to study the different varieties to tell your visitors about them. Unless you have done this you do not know the satisfaction there is saying to a person when he comes into your garden, "This is a Kaiser Kru that I paid ten cents apiece for, the most expensive bulb in the market," and so on. It is a great satisfaction in knowing something about them and having something to talk about. Now, these named varieties will cost a little more than the mixed sort. I have made out a list of what I consider the few best flowering bulbs.

Early flowering Crocuses, Squills, Hyacinths, Tulips, Narcissus.

Now, if you have only seen 5 or 6 combinations of colors upon early bulbs, you may imagine what a fine sight it is to see fifteen or twenty of those fine varieties growing in

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your garden, though you may not be aware that the number of varieties has gone up into the hundreds, and these are the very best, and I assure you it is very hard to restrict this list to the few varieties that I have mentioned. Besides bulbs there are a great many hardy narcissi. As a rule the only narcissus we find in the garden is the Poet's narcissus. This is a very hardy sort and blooms very freely. There are a great many varieties in narcissus, just as there are varieties of bulbs, and by getting eight or ten apiece of these you will never regret it. At Ottawa, where we have very severe winters, we can bring these fine narcissi through without any trouble by simply giving them a little mulch straw in the autumn. The varieties which I consider the best for planting are the following :

Cynosure, Stella, Incomparabilis ft. pl. Orange Phoenix, Sulphur Phoenix, Princeps, Golden Spur, Emperor, Horsfieldi, Bicolor Poeticus Ornatus, Poeticus, Poeticus ft. pl.

This will give you a succession of narcissi covering probably three weeks, and any of you who have not seen those beautiful narcissi can't imagine how fine they are. If you have seen them in the florist's window, some of these immense fellows with long trumpets, you may think they are very difficult to grow, but they can be grown just as easily as the Poet's narcissus, which you see in every garden, and they are so much better that it is surprising more people do not get them. We should also have some hyacinths in the garden, as they are beautiful flowers and do very well when planted in the autumn and given direction. I have made but a short list of these.

Hyacinths.—Gertrude, Gigantic, Lord Macaulay, Roi des Belges, Grand Lilas, Von Schiller, La Grandesse, Norma, Grand Vidette.

Of course there are many others, but these are, in my judgment, among the best. These are also the best kinds for pot culture in the winter time. It is a great mistake to get too many varieties of hyacinths in the winter. There are certain kinds which force much better than others, and which give you all the range of bloom that you desire. The list I have given I have found best for the house and garden. Of course we should also have in the garden in the early spring the snow-drop and the squills, crocuses, which come on before the bulbs, narcissus or hyacinths. Unless you have some early flowering perennials you are going to have a blank in the garden before the annuals or later flowering perennials begin to bloom, and we have found that the Iceland poppy fills this blank. It begins to bloom very early in May, and will continue to bloom all summer if the ground does not get too dry. It is one of the most satisfactory perennials that we have found at Ottawa. It has stems from six to eight inches long, which make it very desirable for cutting, and the prevailing color is of a lemon-yellow, which is very effective in vases and makes it a very useful plant for decorating in the house. The Iceland poppy seed themselves and come up every year, and by leaving some of these in your beds you will get this succession of bloom following the bulbs. Then, after the bulbs there is always a long time in most gardens when there is very little grown, hence the advantage of having this Iceland poppy. Then there are a great many fine early flowering perennials. It is a necessity to plant annuals to make a show in the bed all summer through. These, however, will not begin blooming until about July, so you may have to make provision by early bulbs and by your Iceland poppy and by some other perennials, and there are plenty of them.

Mr. RICE: Is the Iceland poppy an annual?

Mr. MACCOUN: No, it is a perennial; but you very often get it to flower the same season. The seed from the first flower in the spring very often flowers the same season. I will now give you the list of the best annuals to grow. No one can do without sweet peas. They begin blooming about the first week in July, and you can have them up to the hard frost, and I am sure that you will agree with me in saying that there is no finer flower than the sweet pea. You will have no trouble at all in finding plenty of varieties to suit you, because they are all good. Then there are nasturtium, poppy, verbena, petunia, portulacca, coreopsis, aster, dianthus, marigold, zinnia. The zinnias are rather coarse, but make a fine show for fastening together. These annuals I have mentioned keep up a better succession of bloom than any other. I should have mentioned the Phlox Drummondii, which is among the very best to grow. Among lilies there are so many beautiful sorts that you can have a succession of full bloom from the latter part of May until September, which is a very long season. The best species are the *Lilium auratum* from Japan, and *Lilium speciosum*; then there is a variety of *Lilium elegans*

which is very handsome ; it is a sort of crimson-red color, but it makes a very fine effect. Then, among the irises, you can have a series of bloom from the latter part of May until the middle of July. The Siberian irises, which are not very good compared with some others, but which begin to bloom the latter part of May. They are closely followed by the German irises, which you should certainly grow. We have, I suppose, one of the best collections in the country at Ottawa, and all who visit it are surprised at the beauty of the different varieties. The color ranges from white to purple, blue, pink or reddish shade, and they are all intermingled in the flowers so well that it gives them a remarkably handsome appearance. Then following the German irises are the Japanese irises, which are very easily grown, and which extend the season of irises up to the middle of July. A great many people think you have to plant the irises on moist soil because our native irises grow there, but it is not necessary. Some of our best results in irises are on light soil. I might say that we have about 1,200 varieties and species of perennials growing at the Experimental Farm at Ottawa now, and among those I have chosen a few which I consider the best for planting and which cover the field very well, which I will now show you. Of course these dry specimens do not give you any idea as to the beauty of these plants. Mr. Macoun then exhibited a large collection.

OUR FRIENDS, THE FLOWERS.

BY MISS A. HOLLINGWORTH, BEATRICE, ONT.

I wish I could have seen more farmers here, because I want to talk to them of Horticulture. I have always lived on a farm myself, and I want to see the farmers' homes the prettiest in the country, and there is no reason why they should not be, yet the town and city people make a better show of their surroundings than the country people notwithstanding all the advantages that nature has lavished on them. Of course we have some very beautiful farm homes in Ontario, but the majority I find are very desolate looking places, and there is no excuse for it. Why there are not more flowers grown around the farm houses I cannot understand. Two summers ago I travelled around Midland and only saw one good flower garden, and that was at the home of an old bachelor over 60. (Laughter) You generally see a forlorn looking little bush in one corner, and perhaps some orange lilies growing up amongst the grass, but in the great majority of farm homes there is a bad want of flowers. It is not necessary to have a great quantity ; that is a great mistake, because you may try to do too much. Farmers have not time to have specially fancy plots such as they have where gardeners are employed. Rockeries are very nice if you have a hose and can give them plenty of water, but if you cannot give the time to them better not have them, because they look very dreary with dry flowers upon them. Another thing that looks often foolish, is the hanging baskets and the long narrow boxes nailed to the window ledge. This is a good idea for the town houses, and I have passed houses in town that were simply delightful to look at because of the bright window boxes, and I have passed other houses that were an eyesore because they were not attended to. If one goes in for this sort of thing it ought to be attended to or let alone. I find that for busy people the most satisfactory thing is to plant shrubs and vines, and if we cannot afford the nursery stock the woods will help us out with beautiful native vines, and if we cannot afford fancy trellises we can make rustic trellises, get young seedlings and dig holes each side of the garden path and wire those seedlings back and make a rustic arch and train vines over. I have those over my garden paths and over the verandah and over the summer house, and those go a long way towards making a house more home-like ; it looks as if somebody was living there, and not just a calling place. Another thing I notice is that I seldom see rustic work in the country where we can have it for the trouble of making them, and also in the towns where people can appreciate these things. There is no reason why we should not have rustic seats and flower stands, because they are easily made. I think the cedar is the nicest for this work. I took a photograph of a seat that was made at Niagara Falls, and used that as a model. You will also find young pieces with a very graceful curve at the bottom of the trunk, and those curves can be used to great advan-

tage in making things rather than the arms and of the seat and the seat. I like to see make flower I like to see are not healthy keep them is all nonsense they not on out, but the plants are well look to trouble. V window. A than many get frozen, by removing just a little them up as would other garden, the could get a all winter v the same a notice that great differ sensitive to by fire you air.

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tage in making this rustic work. My hands are rough with this sort of work ; I do these things rather than have my home desolate. We take these curved stems for the back and the arms and the legs and the seat, and then take these four feet cross bars for the bottom of the seat and split the lighter part of the stems in two and nail them flat side down on the seat. It is seven years since we made that, and it is a good substantial seat yet. We make flower stands on the same principle. I would like also to speak about house plants ; I like to see lots of plants in the house. There has always been a theory about that they are not healthy, and it is the most foolish thing that people who think it safe enough to keep them in their living rooms think it is not safe to have them in the bedrooms. That is all nonsense. There is nothing better to have around you than plenty of plants, because they not only purify the air by taking up the carbonic acid gas which we have thrown out, but they are a good indication of the sanitary condition of the house. If your house plants are not in a healthy condition your house is not fit for you to live in, and you may well look to your means of ventilation. Of course there may be other reasons for the trouble. We often make the mistake of keeping too many window plants in the one window. A plant needs a good deal of light, and it is better to have a few healthy ones than many sickly ones. At this time of year it often happens that our window plants get frozen, and if we let them alone they will generally die, but we can often save them by removing them as soon as we find they are frozen to a room where the temperature is just a little above freezing point and shower them well with cold water and then cover them up and keep the light from them. In that way we can save delicate plants that would otherwise die. I have often followed that plan with delicate annuals in the garden, then I have gone out before sunrise and watered them with the coldest water I could get and often saved them in that way. After house plants have been in the house all winter we must make the change gradually in taking them out to the verandah, and the same again when we are bringing them into the house in the fall. You will often notice that the leaves and the flower buds also will turn yellow and fall off. There is a great difference between the atmosphere outside and inside, and the plants are very sensitive to it, and in the fall instead of bringing them at once into a room that is heated by fire you should put them into a room where is no fire and give them plenty of fresh air.

Make the change as gradually as possible. If you are troubled with plant lice or other pests, the best insecticide is tobacco cut up and left over night on burning coals in a room with the plants, or in a large packing case if there are not many. Those who have the care of children should not miss the refining influence of flowers. A four year old child whom my sister had taken while her mother was ill, on her return home begged to be taken back because of the flowers in my sister's home. I find that is the case with almost all children. When their minds are beginning to unfold, the ruling passion with them is a love for plants and animals, and it is a pity that more advantage is not taken for developing their finer instincts. We find that instead of that, children are often made old in their ideas ; grown up people tease little children about love and marriage, and stuff their heads with all the wrong notions that should not be there to the exclusion of better and purer knowledge that parents should instil in them. How much better it would be to set the children's minds thinking of the great wonders of nature around them. I am sure that any child would be delighted to learn the history of the pollen grain, that fine yellow powder that falls from the centre of the flowers. It seems so insignificant, and yet like all Nature's workings it is so wonderful. Miss Hollingworth continued her address, giving an interesting history of the pollen grain with illustrations.

FRUIT AND FLOWER CULTURE IN ENGLAND AND IN CANADA.

BY MRS. JOHN HOODLESS, HAMILTON.

I have come to you to-night to ask your co-operations in securing better facilities for educating women in their special occupation on the farm. This stimulus was given me two years ago when I was visiting in England. I have no doubt that there are in this audience a good many revolving in their mind the question, what can women do in agri-

culture, in horticulture, in fruit growing? I used to wonder in the same way, but by a happy circumstance I was enabled to visit in England the agricultural and horticultural schools for women, and was astonished to find what has been done there and what can be done by women. I spent three days at the Lady Warwick Hostel at Reading and also attended a conference at Reading College at which I heard very fine addresses on various subjects, among others how our Canadian produce is shipped to London, and the condition in which it is received, some facts which would not be altogether complimentary if I attempted to tell you all about them. This college is only one of many institutions of the kind throughout the country. I also met representatives from Belgium, Germany, Sweden, and France who told me about the agricultural schools for women in those countries. In Belgium the women receive quite as much attention in the agricultural colleges as the men, in fact they have a very thorough course; and, as you all know, the women in the United States are receiving almost the same attention in the agricultural schools. I know that all the gentlemen present are representative Canadians and extensive fruit growers. I believe if you encourage the Government authorities we could have something done for women here, but you know we women have no votes and therefore have not a great deal of influence. My reason for coming here to-night, is to ask you to use your vote and influence for the education of women in this land. In the college mentioned, Lady Warwick Hostel, the majority of the students were gentlewomen—a very desirable element to interest, because we all know that women of refinement and culture with trained minds, can grasp points and will take much more intelligent interest in matters than the uncultured women of denser mental power. There cannot be too fine training or too much education for women who are going into a question of this kind; therefore they have made rather a stipulation that all those entering shall be women of a certain degree of culture. I saw those young ladies not only digging in the garden, but trenching, preparing the soil for mushroom beds; I saw them working in green houses, and doing everything that could be thought of on a farm garden, or in small agriculture. I discussed the question with the warden, the professors and teachers but, in order to get another point of view I got up early one morning to speak to the gardener so as to get his opinion as a practical man. I asked him if he thought young women would ever be a success in this work. He said, "Madam, I have been astonished at the progress made by these students. I have worked in Mr. Sutton's garden for years, and other large seedmen's institutions, and if I had large green-houses I should rather have women in them than men." I asked why, and he replied, "because they are so much more careful in potting. They attend to the details of the work; they take far more interest in their work in training vines or anything of that kind, they are so much more deft, they are not half so apt to break them. Taking them all in all I consider it is quite in order for women to do this finer work in the green houses" (Hear, hear.) In England they are always bemoaning the surplus female population, and they must find something for them to do; but is not that fast becoming a question here? In Ontario we have quite a surplus female population, therefore is it not time we were considering what we are to do with these unoccupied individuals who should become producers as well as consumers in the interests of their country?

I also saw these students working in the poultry yard, saw them even stuffing fowl. Of course they are taught all this scientific y, not altogether with the view of their doing it themselves but with a view to their directing others. A lady calling at my house last summer and speaking of the question of directing others said, "Five years ago I was left two estates to manage. One was a vineyard, the other a farm. I went from New York to take charge of this vineyard on the Hudson without the slightest knowledge of anything about it. The gardeners wanted to run things their way; but I saw that I had to be very careful or I would lose money. I went to a scientific gardener, spent two or three days with him, had him show me how to prune grapes and pack them; I packed three tons myself in little five pound baskets and got the highest price in New York markets. In two years I came out ahead, but it took me a year to find a man who would do things as I wanted him." They would insist on doing it as they wanted; and that is the difficulty women have to contend with. (Laughter.) Therefore you can understand why a scientific training is necessary if women are to make a success of this work. Just after Mr. Woolverton asked me to address this meeting I wrote to the lady president of the Agricultural and Horticultural Union of England, and asked her, "What

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can I say to our people about the shipment of Canadian fruit to London?" and she replied, "Tell your people to send their fruit to London in better shape; tell them to pack the fruit in small packages, pack according to grade, to put the good kinds in one box, and the second and third grades by themselves." I found when I was in London that by packing choice grapes and pears by themselves as first grade they brought enormous prices,—they are simply for the nobility—only dukes and the royalties can buy these. When they are packed good, bad and indifferent together they bring the lowest price. This I saw for myself. The same remark applies to the packing of eggs. A packer's agent said that Canada sent the worst specimens of eggs to London of any country that sent food products to that city; he showed me some of them—big eggs, little eggs, yellow eggs, white eggs, all packed together in a crate, consequently they brought the lowest price—just the same as the fruit. Of course you know the reputation apples have—big ones at the top, the poorest in the middle. I have had them say to me, "You have good apples in Canada, but you have dishonest packers." (Laughter.) I said, "We have a few honest packers." Londoners will pay any price, and they are perfectly willing to pay for the best. Now if you can arrange a cold storage system such as we heard so beautifully described this afternoon, and with proper packing so as to secure the London market, I think the fruit growers would soon become rich. I have a little notice here which I clipped out of an English paper which I thought might be interesting concerning grapes from Canada:—

"There is now every prospect of a cheap supply of fresh grapes being put upon the English markets in future years during the autumn and winter months. Already the test shipments of these fruits, carried in refrigerated chambers, are on show at Manchester, and the trade expresses much satisfaction at the salable nature of the fruit. There can be no doubt that this great development of the Canadian fruit trade in the United Kingdom will do much to extend the demand for cheap late grapes, for hitherto the middle and working classes have had to depend upon the hard Spanish Almerias, which are sent into our ports packed in cork-dust in barrels weighing from 50 lbs. to 60 lbs. gross. These are the well-known green grapes, so popular with grocers and dried-fruit traders. The Canadian supply will ensure ample quantities of luscious, aromatic grapes, of far superior quality to the Almerias and at a reasonable price. These new grapes have already produced a bit of a sensation in fruit trade circles, for when arrangements have been completed the English markets will be kept well stocked with regular shipments of fresh grapes put up in dainty little baskets, and thus render the storage of the Almeria grapes by market men, to ensure supplies after Christmas, unnecessary. The quality of the fruit is excellent, and it is highly satisfactory to know that Canada can send to this country all the late cheap grapes we need. Although, as previously announced in the *Daily Mail*, the Canadian fruit exports will include the finest pears that are grown, yet the addition of late grapes by no means exhausts the list. Various other fruits are to be sent in time, and the French, Spanish and Dutch shippers will find many of their fruits displaced by the superior products despatched from Canada.

It was only last year that satisfaction was expressed. When I was there two years ago they condemned the Canadian fruit as it was then sent in. Is not the trade in England, as outlined in the paragraph I have just read, worth striving for? At one of the conventions I was unfortunately called upon to second a toast at one of their banquets—which was rather a progressive idea for that staid old country—I took this opportunity to ask the British gentlemen present to explain what had puzzled me considerably in the London markets, in which I was intensely interested. I said that I had been through the London markets, had seen on the bulletin boards all sorts of foreign products—from Germany, Russia, Denmark, Normandy and other countries—but it would take a patent magnifying microscope to find Canada. The answer given was "The reason Canada was not put on the bulletin boards was because its products had got a bad name," and they added, "The fruit, the poultry and the dairy produce that comes in here, if really good, is sold as British, and the inferior is labelled Canadian." Now I thought that very unfortunate. I made enquiries, and told it was true that many of the food products had come over in bad shape and consequently the Canadian fruit had got a bad name, the first class goods had been sold as British in order to bring a good price. They said, "If Canada sends us first class articles we will guarantee to give them a preference." (Applause and "hear, hear") That remark was vigorously applauded by two hundred and fifty representative British gentlemen. Now the question is, how are we going to get our people to export these goods properly? An agricultural paper tells us what women can do in this matter. The article divided them into two classes, the educated and the uneducated. The educated would be useful in writing delivery notes names of plants, directions, invoices, letters, etc., gathering and packing flowers and sundry fruits and vegetables as peaches, grapes, tomatoes, cucumbers, etc.; tying up choice plants, cutting making, pruning, seed sowing and grow-

ing etc., etc.; while the uneducated could do potting, hoeing, weeding, dressing against insects, watering, seed saving, tying and training, thinning grapes, etc., etc., and much of the same kind of work as undertaken by the educated, but turned over to them as being of a rougher nature. Training schools for women are receiving a great deal of attention in England, and the necessity for them here was emphasized last fall when I offered a prize for the best trussed fowl at three or four of our exhibitions. Some farmers asked what was meant by trussed fowl; they wanted to know if they were to be cooked, plucked, or what had to be done. Now when our people do not know how these things should be put on the market, how are they to learn without teachers? The thought occurred to me that it would be a good plan to bring out one of these scientifically-trained English women who can explain and show us exactly how these things should be placed on the English market—one who had had sufficient experience and training to co-operate with our packers and show them exactly what should be done. That is just a thought, suggested in passing, from a woman's point of view. Speaking again of the Lady Warwick Hostel, I saw the students making mushroom beds; one lady told me she had served a three months' apprenticeship to this, and the year before she had made quite a large sum from the cultivation of mushrooms alone. Now when these things can be done in England, they can be done in Canada. About three years ago we asked the Farmers' Institute to co-operate with us in establishing women's institutes throughout Ontario. The government made a small grant for their support, we have had meetings, papers, and talks until we are weary of them. We want something more than talk, and the women's institutes have got to the point now when they want a practical teacher. Many admit that they do not know how butter should be prepared for the market, that they do not know how to care for fruit or flowers or anything else scientifically and they are anxious to be taught. Therefore, scientifically trained teachers, who will go out through the different districts and give the women, through the women's institutes, a thorough practical training is the need of to-day. You may think this is a Utopian scheme, but it has been done in England at the expense of the county councils, and I believe our county councils would co-operate in such a movement. We have asked our government, through the women's institutes, to consider the establishment of a women's building at Guelph. I do not know whether they have given the question any consideration or not, but I assure you there is and there will be a demand for that training. In order to show you how this question will appeal to the intelligent class of women, I may say that during last year at the Normal School of Domestic Science in Hamilton this question was discussed with the result that three students are making application to enter the Guelph College to learn butter making and poultry raising; and to take lectures in bacteriology and entomology; so you see there is rather an intimate relation between the two subjects. I was struck to-day, in hearing Hon. Mr. Latchford's address, by the very close connection between domestic science and flower culture. When those girls came to our school they had not the faintest idea of taking up horticulture, or dairying or anything of that kind, but they got interested in bacteriology and other subjects related to these questions, which led them to believe there were such instructors needed. This is why I come to you to night to ask you as representative Canadians to support the women in their appeal to the government for a building at the Ontario Agricultural College where young women may study entomology, scientific flower and fruit raising and any other branch of agriculture for which they may be fitted. In passing I may say that flower culture may be made very profitable. Few people in the city think their table complete without flowers, and the demand for these things is increasing; from being a luxury, flowers are now considered a necessity. Such an institution as I am here asking for will strengthen your cause and give you true helpmeets in your homes. I repeat what has been done in England and other countries can be done in Canada. The year before last I was collecting information from the different provinces as to "What were the Possibilities for Women in Agriculture?" for the Paris Handbook. From every province, even from Manitoba, where they would not expect to do very much in the way of fruit and flower culture, the answer was that such work could be made profitable by the women. Provide the training school, send your daughters there instead of to a commercial or Normal school, then agriculture for women will become popular. (Applause.)

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SHIPPING APPLES TO GREAT BRITAIN.

J. M. SHUTTLEWORTH: I have been very much interested indeed to hear the addresses that have been given to-night by the ladies, and also those that were given this morning and yesterday by the gentlemen. As you are aware, I have taken issue with some of the views expressed. A great deal has been said about the ignorance of Canada by our English friends. For seventeen or eighteen years I lived in England, and I did find that there was ignorance, but not such gross ignorance as one would suppose from what has been said by some. Dr. Saunders spoke about not being able to find Canadian apples in Liverpool and also made the statement that our apples did not reach places very far outside of Liverpool. They must have been consumed somewhere, and someone knew about Canadian apples. The point is this: our Canadian apples last year were falsely packed, most dishonestly packed, and it brought ruin or almost ruin, to a great many of the men who packed those apples, or for whom the apples had been packed dishonestly. There were about 500,000 barrels of apples shipped last year to Great Britain from Ontario alone. Had there been 250,000 instead of 500,000, more money would have been brought back. This is a very important question, this one of dishonest packing, and one that we must not shirk in any way, shape or form. We have got to get at it in the best and quickest way we can if we want to keep our reputation, or at least regain it, for we had a better reputation a few years since than we have at the present time. I may say that this year I have had but very few complaints from our people on the other side of false packing. Our fruit was good, price was low, and there was not the same incentive. If our English friends can take nearly 2,000,000 barrels of apples at a fair price, what are the possibilities of the Canadian trade? What are the dimensions to which the Canadian trade might reasonably and profitably be developed? I think we might say there is a strong sentiment in favor of Canadian products at the present time. There is a very kindly feeling on the part of the English consumers towards us, that if we can put on their market as good, or a little better, fruit than the others they will consume more of our fruit and pay us better prices for it, but they will take it in preference, provided it is just as good, if they know it is Canadian fruit. I believe that. There is a good deal of sentiment after all, and you will see that more and more as the years go by, I think. If we can take 500,000 or 1,000,000 barrels of our apples, packed as they are now and with the quality of fruit that we are giving them and the varieties, and get a fair price, I think we might reasonably expect that a profitable business might be done in the future with better facilities for shipping, with better handling of our fruit, better grade fruit and with better varieties. We could double or even treble it; some think more than that. I think we could improve the quality of our fruit and we will get better prices for it. Referring to the varieties as suggested by Prof. Macoun, there are three varieties that you ought not to grow at all—they are hardly fit for a man to eat. These are the Gano, the Ben Davis and the Pewaukee. The only thing that redeems the Gano and the Ben Davis is their fine appearance, but those that are grown in Kansas are very superior to our Ben Davis and Gano—a difference that I cannot account for. In order to make our hardier varieties such as Spy, and Greening good standards, there is nothing better we can do than graft them on very hardy stock, such as the Tallman Sweet, and we would thus get profitable crops and hardier and better fruit. I am speaking this not so much from my own experience as from information I have had from men who have had experience. I would ask those who are better capable of judging whether I am right or not, whether the Tallman Sweet is a good stock to graft Spys on? (Voices, "Yes"). With improved transportation for the better handling of our fruit the Spy I believe is going to be the apple. It deserves to be. It keeps its nice fresh crispness until all other apples have become dry. It is a nice looking apple generally, unless the foliage has been exceptionally heavy, or where the trees have not been properly pruned. It is a very nice looking apple; it has a bright appearance.

A DELEGATE: How would the King do?

Mr. SHUTTLEWORTH: The King is a nice looking apple, but there is some objection to the growing of Kings because it is what we call a shy bearer. It takes well. It is a showy apple, but I do not think quite so much of it as I do of other varieties. The apples are usually too large. They bring very high prices because they are showy.

The reason the Ben Davis has sold in the past is because the apples are showy ; they do to dress windows, and they keep their appearance longer than any other apple. They have been used more for show purposes than anything else, that is our Canadian Ben Davis, but if we can get better fruits in our warehouse, which we shall shortly do by having better transportation facilities and better care of our fruit, we will have a surplus of Ben Davis, and they will bring the price they deserve to bring—the lowest price. The most important question we have to deal with outside of the packing is the question of transportation. If you would see, as I have seen in the past few years, the holds from which our apples were taken, you would wonder we ever got our apples there at all. (Hear, hear). I have climbed down into the holds after the hatch was taken off, and the carbonic acid gas made me dizzy. Now, can apples keep in such an atmosphere? Until some appliances are used we will never get over that difficulty, because the first duty of a captain of a vessel is the safety of his vessel. I have crossed often times in bad weather when it was as much as a captain could do to get his vessel in, and where he had to batten down his hatches and batten his companionways for the safety of his ship. Unless we can protect that fruit and give it fresh air we shall have many rotten cargoes. For a long time I have been urging upon our steamship people to pay greater attention and care to the handling of fruit, while on board. About 8 or 9 years ago we were handling a large quantity of fruit from Boston, and one of the lines seemed to think that apples were pig iron, the way they handled them. I saw them discharge their fruit on a gang way, about 18 or 20 feet up, and they were skidding the apples down one after another, and sometimes the barrels would shoot 20 feet, and sometimes the head would be burst out and the apples would be spread all over the dock. I told the man in charge that that must be stopped. He asked me to move away, or I would be hurt. I said I would not. The thing developed into quite a quarrel. However, they telephoned up to the office and asked them what to do. They asked me to come and see them, which I did, and I told them if they could not handle fruit better than that they had better stop altogether. We cabled out and stopped shipping on that line. It was not long before those people realized how important it was to look after their shipping. Instead of getting eight or nine steamer loads they got nothing. We hit them in the right spot. It is the only place you can hit them. The only place you can hit a dishonest man that packs his fruit falsely is in the pocket ; and hit him hard. Those people asked us what they should do, and we told them we would not use their ships unless they handled the fruit properly, and now they have some of the best fruit-carrying boats in existence, they have put in exhaust fans and they are drawing off this carbonic acid gas and they are letting in the fresh air. Our apples are arriving in perfectly good condition from these vessels all the time, no matter what the weather is. I believe they will shortly put those appliances in all other boats, and those lines that are going to cater to the interests of their clientele will endeavor to do what is best for them, because their interests and the patrons' interests are identical, if they only look at it in that way. I might say that the boats that sail from Montreal have not anything like the capacity for the fruits that they usually carry. Some one said, I think to-day, that apples were stood right against the funnel. Well, they can't get there very well, but they can get in the bunker hatches, and that is hotter than they should be. Some of them have been stood in places where there is not a possibility of getting ventilation. They have nothing but open, funnel-shaped ventilators, and you cannot drive air in there. You cannot possibly get fresh air down into those hatches when they are nearly full, or full right to the brim, with a cargo, but you can draw out the bad air and fresh air will find its way in, if you have appliances for it. Another very important matter is that of distribution. You can understand that after our fruit has undergone those hardships incidental to a voyage, under the conditions which you may infer from what I have heard, the sooner those apples are put in the hands of a customer the better it is for everyone concerned. To distribute a good deal of fruit through the country as it lands would simply mean ruin. When you have distributed in London, Glasgow, Liverpool and Manchester you will find that you have about covered the ground. If you attempt to send apples to Wolverhampton or to Birmingham or to Leeds or to Sheffield, you will find that you will miss many chances of getting markets. At Liverpool for instance you will have buyers, as we do, from all those large cities. Sometimes Birmingham is loaded up with fruit ; if you had a shipment, or consignment, going to Birmingham you would come upon a glutted market. Sometimes Manchester is loaded

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up, sometimes Leeds, etc. But when one market is loaded up three or four others may be wanting apples; they have not bought so heavily the previous weeks. Sometimes the trade is better there; sometimes textile manufacturers are in good shape, and sometimes the iron, sometimes the coal industry in Wales, so that we have to get a congregation of buyers at a central place to get an even market where prices will run even throughout the season. This is a point which is not quite well understood. For instance, if I have Tallman Sweets—an apple that is not generally liked—I always look over in one corner for bids from certain men from a place called Bolton, where they like Tallman Sweets, as they do in Baltimore on this side and they like Bellflowers in Baltimore. Those differences exist there very markedly. I would never dream of sending Tallman Sweets to Manchester, unless we could get some of those buyers up through the Rosendale Valley to come down and buy them. I would never think of sending Russets to Glasgow up till a certain date, because they do not want Russets there. That brings me back to the point of the middle man; the man who is trained for that service is able to understand those conditions better than you gentlemen here, who are (or should be) looking to the eradication of your insect pests, doing your work well here and not attempting to do it there. You want good, honest middlemen—the only legitimate trader, practically, and you have to depend on him. If we can only get good, honest middle men, backed up by this same sentiment on this side that we want the best accommodation possible for this fruit trade, we will get a great many things from the steamship companies and transportation companies we could not otherwise get. We know what is wanted from that end; you know what is wanted from this end. If you will only back us up we will get some of those things that we want, that we say are necessary. I might make a few suggestions in regard to peaches, pears and grapes. I do not think that our grapes will take very well there. We will have what they call the low-class trade. Englishmen like to bite their grapes, like to take out the seeds, and they don't like to swallow them, as they are afraid of that complaint, appendicitis. They can get those Almerias, mentioned by Mrs. Hoodless, a more solid grape and a nice grape to eat. They can also get the Muscatels and some other grapes from Malaga, and they will never want to eat our grapes over there for the reason that they cannot bite our grapes, as the centres are very sour and very tough. So until we improve the quality of our grapes we may never hope for a real good trade for grapes. I should like to be with you to-morrow, if possible, to talk over that Act to prevent dishonest packing, which is ruining our trade. It has made me sometimes ashamed to think that the apples came from Canada. I have been hauled over the coals a good deal for taking the stand I do in that matter, but I believe I am right. I believe it is harmful to our trade, harmful to our pride, and it is wrong. (Applause).

REPORT OF COMMITTEE ON RESOLUTIONS.

Mr. WHITNEY read the following report which was adopted as read:

Your committee on resolutions beg leave to report as follows:—

- (1) That this association deeply regrets that our director, Mr. Thomas Beall, has been prevented from being present at the present meeting, owing to illness and death in his family, that we have missed his valuable assistance in our discussions.
- (2) That this Association extends to the family of the late Charles E Woolverton our heartfelt sympathy, and that we hereby record our appreciation of the valuable services he always rendered to the cause of fruit culture.
- (3) That this Association would hereby tender to Mr. L. B. Rice, Port Huron, the esteemed delegate of the Michigan Horticultural Society, our thanks for his valuable address and that we have highly enjoyed his presence at this meeting.
- (4) That this Association hereby returns thanks to the Mayor and Council and people of Brantford for their welcome and the use of their Town Hall for our meetings, and that we assure them that they have helped us in holding one of the best meetings in the history of this Association.
- (5) That we hereby tender thanks to the ladies and gentlemen who have aided in making this evening's meeting pleasant.

(6) That this meeting of the Ontario Fruit Growers' Association desires to express and put on record its regret that this Association has not received greater recognition at the hands of the Dominion Government in connection with the recent Paris Exposition.

Considering the important work that this Association is doing, the wide scope of that work ; and considering especially the services that it rendered in collecting the fruits of this province for the exhibit made at Paris, and the splendid contributions which its members individually and collectively made to that exhibit, which attracted the attention and admiration of all the nations of Europe, we regret the apparent oversight on the part of the Department of Agriculture at Ottawa, that a representative was not chosen from among the officers or members of this Association or some one directly in touch with the fruit growing interests to represent these interests at the said Exposition ; nor was this Association consulted in the choice of any representative sent to the said Exposition to represent the interests of Canadian fruits and fruit growers there.

Furthermore ; in view of the Pan-American Exposition to be held in the city of Buffalo during the coming summer of 1901, and considering the importance of making a large and attractive display of Canadian fruits at that Exposition, we deem it in the interest of the fruit growers of Canada generally, and due to the exertions and influences of this Association that some active fruit grower recommended by its executive should be chosen and appointed by the Department of Agriculture at Ottawa, or by the Agricultural Department of Ontario, or by both conjointly, to take charge of such exhibit of Canadian fruit as may be made there.

INSPECTION OF FRUIT.

Mr. A. H. PETTIT, presented the following report of the Committee on Inspection :

We, your special committee to whom was referred the question of legislation to prevent fraud and misrepresentation in the packing of fruits, beg to recommend that Bill No. 127, as submitted at the fifth session, eighth Parliament of Canada, be so altered and amended to read as follows :—

FRUIT MARKS ACT.

1. This act may be cited as the Fruit Marks Act, 1901.
2. This act shall come in operation on the first day of July, 1901.
3. Every person, who by himself or through the agency of another person packs fruit in a closed package intended for sale, shall cause the package to be marked in a plain and indelible manner before it is taken from the premises where it is packed ;—(a) With the initials of the Christian name and the full surname and address of the packer ; (b) with the name of the variety, and (c) with a designation of the grade of the fruit.
4. No person shall sell, offer, expose or have in his possession for sale any fruit in closed packages unless the name and address of the packer is marked upon the package in a plain and indelible manner.
5. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package which is marked the grade A. No. 1 Canadian, unless such fruit consists of well grown specimens of one variety, of normal shape and not less than ninety per cent. in each package free from scab, worm holes, bruises and other defects, properly packed and marked in a plain and indelible manner with the minimum size of the fruit in inches (or fraction thereof) across the core of the apples or pears as the case may be.
6. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package upon which is marked the grade No. 1 Canadian, unless such fruit consists of specimens of one variety, sound, of fairly uniform size and not less than eighty per cent. in each package free from scab, worm holes, bruises and other defects, properly packed, and marked in a plain and indelible manner with the minimum size of the fruit in inches, (or fraction thereof) across the core of the apples or pears as the case may be.
7. No person shall sell, offer, expose or have in his possession for sale any fruit packed in a package upon which is marked any designation of size, grade or variety, which falsely represents such fruit, or in which the faced, or shewn end gives a false representation of the contents of such package ; and it shall be considered a false representation when more than fifteen per cent. of such fruit are substantially smaller in size, or inferior in grade to, or different in variety from the marks on such package, or from the shewn or faced end of such package.

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8. Every person who, by himself or through the agency of another person, violates any of the provisions of this Act shall, for each offence, upon summary conviction, be liable to a fine not exceeding one dollar and not less than fifty cents for each package which is packed, sold, offered, exposed or had in possession for sale contrary to the provisions of this Act, together with the costs of prosecution, and in default of payment of such fine and costs, shall be liable to imprisonment, with or without hard labor, for a term not exceeding one month, unless such fine and the costs of enforcing it are sooner paid.

9. Whenever any apples or pears packed in a closed package are found to be falsely marked, any inspector charged with the enforcement of this Act may efface such false marks and mark the words "falsely marked" in a plain and indelible manner on such package.

10. Every person who wilfully alters, effaces or obliterates wholly or partially, or causes to be altered, effaced or obliterated, any inspector's marks on any package which has undergone inspection, shall incur a penalty of forty dollars.

11. The person on whose behalf any fruit is packed, sold, offered or had in possession for sale, contrary to the provisions of the foregoing sections of this Act, shall be *prima facie* liable for the violation of this Act.

12. It shall be lawful for any person charged with the enforcement of this Act to enter upon any premises to make an examination of any packages of apples or pears suspected of being falsely marked in violation of the provisions of this Act, whether such packages are on the premises of the owner, or on other premises, or in the possession of a railway or steamship company; and any person who obstructs or refuses to permit the making of any such examination, shall, upon summary conviction, be liable to a penalty not exceeding five hundred dollars and not less than twenty-five dollars, together with the costs of prosecution, and in default of payment of such penalty and costs, shall be liable to imprisonment, with or without hard labour, for a term not exceeding six months, unless the said penalty and costs of enforcing it are sooner paid.

13. In any complaint, information or conviction under this Act, the matter complained of may be declared, and shall be held, to have arisen, within the meaning of Part LVIII of *The Criminal Code*, 1892, at the place where the apples or pears were packed, sold, offered, exposed or had in possession for sale.

14. No appeal shall lie from any conviction under this Act except to a superior, county, circuit or district court, or the court of the sessions of the peace having jurisdiction where the conviction was had; and such appeal shall be brought, notice of appeal in writing given, recognition entered into, or deposit made within ten days after the date of conviction; and such trial shall be heard, tried, adjudicated upon and decided, without the intervention of a jury, at such time and place as the court or judge hearing the trial appoints, within thirty days from the date of conviction, unless the said court or judge extends the time for hearing and decision beyond such thirty days; and in all other respects not provided for in this Act, the procedure under Part LVIII of *The Criminal Code*, 1892, shall, so far as applicable, apply.

15. Any pecuniary penalty imposed under this Act shall, when recovered, be payable one-half to the informant or complainant, and the other half to Her Majesty.

16. The Governor-in-Council may make such regulations as he considers necessary in order to secure the efficient operations of this Act; and the regulations so made shall be in force from the date of their publication in *The Canada Gazette*, or from such other date as is specified in the proclamation in that behalf.

17. Wherever the term "closed package" occurs in this Act, it shall mean one in which the contents are invisible and that cannot be opened and reclosed without material damage to said package.

The word "packer" when used in this Act shall mean the person on whose behalf any fruit is packed.

Mr. MCKINNON: I move that the words "packed in a closed package" be struck out of section 7.

The SECRETARY: I would second Mr. McKinnon's motion. I think it is all right.

Mr. McKinnon's motion was put and carried as regards clause 7, to leave out the word "closed," allowing the words to stand, "packed in a package."

The motion to adopt the report as amended was put and carried.

APPOINTMENT OF INSPECTORS UNDER THE ONTARIO ACT.

Mr. MCKINNON moved the following motion in reference to appointing Inspectors for the Ontario Act, which was carried: "That in the opinion of this Association the successful operation of any Act for the prevention of fraud in the packing of fruit will depend almost wholly upon the competency and character of the officers appointed to enforce it. That this Association, therefore, without wishing to interfere with the legiti

mate patronage of the Government of Canada, hereby memorializes the said Government to consult the Executive of this Association with regard to the appointment of any such officers acting within the Province of Ontario." Mr. Elmer Lick was appointed to represent the Association at Ottawa in conjunction with Mr. E. D. Smith, M.P.

FRAUD IN THE SALE OF FRUIT.

Mr. CASTON: I have a motion memorializing the Ontario Legislature to enforce the Act to prevent fraud in the sale of fruit.

The motion was seconded by Mr. Murray Pettit and carried as follows:

"Resolved that the Fruit Growers' Association of Ontario domemorialize the Legislature of Ontario as to the necessity of providing some machinery for the more effectual enforcement of the Act for the prevention of fraud in the sale of fruit."

SAN JOSE SCALE.

BY PROFESSOR W. LOCHHEAD, ONTARIO AGRICULTURAL COLLEGE, GUELPH.

The San Jose Scale question has reached a very acute stage, and something has to be done. The first point I wish to impress upon you is that the remedies are before you for the regulation of the Scale. I do not mean that it is likely to be exterminated by any means of that kind, but we have materials at hand by means of which the scale may be controlled. It will never be controlled unless some systematic effort is made by the fruit growers or by the Government. The present practice of allowing fruit growers, or the owners of orchards that are infested, to spray according to their own wish, virtually, will not get rid of the Scale. I maintain you might as well throw water into a sieve. You know the life history of the Scale. You know that trees that may be treated in the spring may have comparatively few Scale left, and by the 1st of August the trees may be comparatively free from Scale, but if your neighbors' orchards are badly infested, then by the first of October, or middle or end of October, your orchard will be as bad as your neighbors', virtually. You know the agencies which are at work disseminating the Scale. These are the winds, the birds, and the fruit packers themselves. I think it is better for this Association to deal with this matter and to impress upon the Government that some systematic effort should be made to keep the Scale in control. You should impress on the Government the necessity for a more rigid inspection. The Government, I think unwisely, left off the work of the inspection of the orchards last season, a season and a half now, and I know for a fact the Scale has spread to other parts of which we had no idea at the time. A competent corps of inspectors should be kept at work, and the orchards which were infested should be looked after. Then the Government should pass some measure which would compel the owners of orchards either to spray their trees, or to pay for the spraying of the trees when done by the Government (Hear, hear). That is the only way I see that the Scale can be kept in control. The Scale has spread terribly this last summer, and we have reached a crisis, and I would urge upon you to do everything in your power to persuade the Government to help you in the matter. You cannot work it yourselves; you must have Government intervention in the matter. Whether the Government is prepared to supply soap at the same rate as before I do not know, but it would be a good thing to continue it another year at any rate, and to provide a corps of Inspectors, and to see that the soap is up to the mark. I think we should back up the officials in this matter. We have been blamed for not furnishing a suitable remedy, but as I told one of your members, we are as up to date as any state in the Union. There is no state more successful than Ontario. The State of Ohio has appointed an Inspector and given a large appropriation to see that orchards are inspected and treated with whale oil soap, which we believe to be the best and most efficient, and any trees that are not treated by the owners when found to be infested are sprayed by the officials and the owner is compelled to pay the cost of the work. In New Jersey the Scale is a very serious pest and has been for years, the infested districts there being much worse than

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ours, but the fruit growers there have not given up hope; they are treating every year. They have tried many remedies, and they maintain that the crude petroleum is the most effective. Professor Smith has recently shown that the successes and failures of the recent petroleum experiments in New Jersey are traceable to the standard of the oil which has been provided. Where the oil fell below a certain standard, tested by the hydrometer oil test, it resulted in either death to the trees or life to the scale; but where the oil was above a certain standard then it almost uniformly succeeds. Of course he does not mean that it was eradicated by any means, but simply that the fruit growers can, by persistence in spraying, get a good crop of fruit upon a tree.

Mr. MCKINNON: What is the average cost of spraying in the States for a full grown peach tree, say?

Prof. LOCHHEAD: I would not positively say. Professor Smith says in his report that a pint and a half of crude petroleum is sufficient for an ordinary sized peach tree.

The PRESIDENT: How often do they spray in a year?

Prof. LOCHHEAD: I understand just once.

The PRESIDENT: Are there any cases where they have been successful in saving an orchard?

Prof. LOCHHEAD: Oh, undoubtedly. Professor Smith mentions in his report an orchard which the owner thought was beyond redemption, that this year gave a splendid crop of marketable fruit after treatment with the crude petroleum.

The PRESIDENT: The supposition is, then, that it will have to be continued year after year?

Prof. LOCHHEAD: Yes, I hold out no hope that the scale can be kept in check by a single spraying this year, and not needed next year. It must be continued year after year.

FIGHTING THE SAN JOSÉ SCALE.

BY GEORGE E. FISHER, FREEMAN.

I endorse all that Professor Lochhead has already said in regard to this matter. You will remember that at the beginning we made a general inspection in the fruit sections of the country, and afterwards, finding the Scale upon some young trees, went to the nurseries, and found the Scale in the nurseries, and got a list from every nurseryman, which list occupied sixty pages of foolscap, and we followed the trees that were indicated by this list over the country, from one end to the other, and found the Scale in a hundred different places. Those trees were taken out and destroyed. Subsequent examination revealed the Scale in thirteen places, and still later examination in ten places, so that these ninety places appear to be clean at the present stage of the work. This occupied the whole time from the first of October to the close of the year, and the men were driven in by heavy snow storms, and the sudden change to cold weather, and they came in with frozen ears and noses, and the weather made it impossible to continue the work at that time. On the 12th January we went into the nurseries and we made an examination of all the nurseries of the Province of Ontario; we examined four millions of trees, tree by tree—not as it was done on the other side, where an inspector goes through, taking a number of rows, or perhaps takes a walk around a block. The Scale was located in seven nurseries, and a very large number of trees were destroyed to destroy a very small amount of Scale. You will learn from this what a deluge of scale the country has been saved from by this work. I have every confidence in the work that was done in the nurseries. I believe our nurseries are very clean at the present time. At the beginning it was thought that there was only a little Scale in the country, and that the proper way to dispose of that Scale was by burning; and from my experience and what I have learned since I fully endorse the course that was taken. (Hear, hear), I think it was the only right thing to do. But in the course of our work we found that the Scale had spread beyond what was supposed, and that to continue destruction by burning would necessitate the destruction of a very large percentage of the trees in some of the large fruit sections, which was not considered practicable; it was therefore thought desirable to resort to remedial measures. Then, at the suggestion of the Minister

last winter, we endeavored to get material here in Ontario. Soap manufacturers in St. Catharines, Hamilton and Toronto were consulted, and nobody was in a position to supply us, and they did not know where to get the material, and so we had to go outside of the country last year, which would not be necessary again. The feeling among the people last year was that whale oil soap was a safer remedy than anything else, and was perfectly reliable. The reports that have come to the Department from those that had visited infested sections would lead to that conclusion; but I have learned that in treating orchards the Scale had not sufficiently recovered its ground, by the time that those inspections were made, to enable those who made the inspection to know very much about the real condition. The Commission which went through this country in June and July, and went to Catawba Island, and returned from there reporting that the soap was a satisfactory remedy, had very little opportunity to know from examining the trees at that time of the year. The Scale remaining alive after the application had not sufficiently multiplied to make their presence very conspicuous, but during the months of August and September and to the middle of October they multiply very rapidly indeed, and when I went to those places in October I found the Scale on those trees without any trouble. There is no reflection cast on the early examination.

Mr. MCKINNON: Weren't these trees being seriously injured when you saw them last?

Mr. FISHER: I will come to that a little later. As regards the effectiveness of the soap, we got what we then and still supposed to be the best soap available. It was distributed to those who would undertake to do this work, with the understanding that they would do it according to instructions provided, which required that the soap should be applied to the tree in the strength of two pounds to the gallon of water when the trees were infested, and a pound and a half of soap to the gallon of water in cases where there was no Scale known to exist, and it should be applied to the tree until all parts of the tree were covered; but in subsequent examination, on knowing how much soap had been received by the growers and the extent of orchard treated, we found that the soap had not been used in sufficient strength in the mixture, and early in the season, when the soap was still to be seen on the trees, we could tell from that, that it had not been applied thoroughly, because some portions of the tree would show the soap and other portions would not, and a little later on, these portions where the soap had not been applied were breeding quantities of Scale. It was quite easy to see that the work had not been thoroughly done. Under such circumstances as these it was not surprising that the work was not satisfactory. But quite a number of persons did not do the work thoroughly, using the full quantity of soap and applying it as well as they could, wetting the trees all over, and in such cases—especially in the cases of trees that had become encrusted, where the Scale had become plentiful and encrusted so that there were several layers of the Scale to be saturated by the application, the results were very disappointing. We did some work ourselves, in order to be satisfied about the value of the remedies, and we have no example in which we can feel that we have materially reduced the Scale on any tree. This work was done with the whale oil soap. When I say this, I mean that the condition at the present time is not better than it was a year ago. Of course the application has been a very great check upon the Scale, and had these bad trees not been treated they would have been encrusted with the Scale by this time, and as it is they are in just as good a shape as they were when the treating was done generally. And that condition prevails throughout the country. It seems to me that there is a condition essential to any remedy which is used on trees for the destruction of insects, and that condition is that the remedy shall remain soft on the trees for a very long time. Crude petroleum is as near the condition as we can get. It will remain weeks, and even months, in a free condition on the trees. Now, soap that will remain on the trees in that condition I am sure will do good work, and I am sure also that the soap that we used this year was made from somewhat lower grade materials than are necessary; that is, better grades of material should be got. I went to Catawba Island this fall, and made a pretty careful examination into the conditions there, because I found opinion very much divided. Some people there are still a little afraid of the oil, but a great many of them feel that they must abandon the use of soap for crude petroleum. Some of them say that they have used whale oil soap on their trees for three or four years in succession, and that while this has been going on the Scale has increased to such an extent that the trees are

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very much worse at the present time than they were at the beginning of the treatment. In fact some of them say that some of their trees in their orchards are weakening under the attack of Scale, but from what I have seen in our own work, I cannot see that the Scale is likely to increase where the work is well done; I think the soap will keep the scale down in those orchards to what it was when we began. There is, of course, always an opportunity of it spreading. Spreading goes on very quietly, and we don't know very much about it. That is one of the most difficult features in the work. It has been found in a great many orchards in which it was not found a year ago. It may have been in those orchards. I found the same conditions in regard to soap all the way through. The price of material has increased, and the tendency has been to use a grade of material that would enable soap makers to sell at old prices, and soap is none to good, at best, and in order to do good work it is necessary to use the very best material. In Ohio I do not think they favor whale oil soap in the government work. They think that a whale oil soap can be made that will kill the scale, and that whale oil soap reaches it and holds it in check, and that it is sufficient to use on the trees. They regard the other remedies as unsafe. The effect of whale oil soap on the trees in regard to cleaning them up is very marked indeed. We found that the crude petroleum would not destroy leaf-curl; whale oil soap used at half strength is just as effectual in destroying leaf-curl as when used at full strength. Another little experiment which I thought very nice was that we ran off some ordinary lye from ashes from the leach, and that was put on several rows in a young peach orchard, and the leaf-curl did not put in appearance on those rows, while the balance of the orchard was so badly affected that almost all the foliage came off. The spraying was done immediately before the buds opened. That is the time which seems to be the most propitious, when it seems to be the most destructive to the insects and the least injurious to the tree; it does not seem to make any difference whether you are using whale oil soap or crude petroleum or what you are using, the tree, because of its greater activity at this time of year, has more resistance, and because of the greater activity of the Scale is more susceptible to injury. But we have in Ontario some very good examples of the use of crude oil.

I will refer to some trees that were treated at Titterington's, in St. Catharines. There were nine trees treated. Three of them were supposed to be treated with 25 per cent. of crude petroleum with water; three with 33 1-3, and three of them with 40. We had a pump with one valve drawing from two chambers, and the quantity of material was supposed to be regulated by the size of the aperture. This we tried for a while, but found that it would not give us the regular quantity, and then we tried kerosene and water, which was very satisfactory as far as the positive action went, but the behavior of the mixture in the hose was very disappointing, and that was abandoned. The London people are making a pump which, as far as I have used it, has been very satisfactory indeed, and I think you can depend upon that London Spramotor combination pump as reliable for making a mechanical emulsion of either kerosene and water or crude petroleum and water. It seems to work very nicely where it is used carefully; but oil and water are so different in gravity they seem to be a very slippery combination, and you have to use a good deal of judgment and care in applying them. And right here I would like to caution those who will use this emulsion, about spraying any portion of the tree more than once. We will assume that you are trying to put on an emulsion of 25 per cent. of oil with water. If you allow the nozzle to pass several times along the portion of the tree, you are putting on 25 per cent. every time the tree is covered with the nozzle, and in putting on this percentage you are endeavoring not to allow the nozzle to cover any portion of the tree more than once, and in order to make thorough work you should be very careful about doing the inside or upper side of the limb on the opposite side of the tree from where you are standing. But I have got away from those trees of Mr. Titterington's. We had a number of trees treated with soap. There were four or five different kinds of soap used there, with no good results from any of them, inasmuch as the Scale on the badly infested trees was very much more plentiful this winter than it was last. There are nine trees treated with crude petroleum, and it is almost impossible to find a single specimen of the Scale on those trees. They stand very near together, and the comparison is very marked. One of these trees treated with crude oil has a limb which is badly infested. Now this limb serves the purpose of showing that that was a badly infested tree when it was treated and it also shows how easy it is to miss a portion of a tree. I think any of you who

would visit Mr. Titterington would be very much pleased for having made the visit. The crude oil is a perfect remedy so far as the destruction of the Scale is concerned—almost perfect but not quite. There are always some left as far as we know, for out on the young growth on those same trees you will find a live Scale. There is a marked difference, however, between the oil and the soap in the resistance of re-infestation even when recently applied. I found some trees in August and I applied soap with a white-wash brush to several of them, the trunk and large limbs, as far up the top as I could go without going into the foliage. The Scale was perfectly killed up as far as I went. Above where the treating had gone the Scale increased so that the top of the tree was entirely encrusted, a very marked increase, and I think that you may take that as a fair example of the increase of the Scale this year on infested trees. You could scarcely find a bit of bark that was exposed to view on those trees, and at the time of their treating on the 18th of August the Scale was only in such quantity as you would understand when I tell you that it was nicely peppered over—that is the way that we speak of it among ourselves. On the lower portion of the trunk the condition remained much the same as when the soap was put on. Between that and where the soap was there was a great deal of re-infestation. The Scale had come down from above, where the treating was done, and had fixed right there on the soap within a month, and had come to maturity, and had given birth to young that had fixed in the neighborhood of their mother. The breeding seemed to go on on the top of that soap just about as well as anywhere else; but it is different with the crude petroleum, because no Scale can fix themselves or live on it. I can take you to trees that are badly infested that were treated with crude petroleum in the spring of the year; the Scale remained there just as it was when the oil was put on them, but all dead, and there is nothing alive on the main branches or large limbs of the tree anywhere; the only part of the tree that has been treated with oil that you will find live Scale is some portion of the tree that has been missed or out on the young growth beyond what was present when the treating was done. There is that difference between the oil and the soap. I have endeavored to ascertain what Canadian oil is like and to compare it with what is necessary for such work, and the result is that we have no oil in Canada of sufficiently light specific gravity to be suitable for the purpose. Professor Smith says in his Bulletin that oils that show a specific gravity of less than 40 are not fit for this work. There seems to be too much paraffine in such oils, which has the effect of closing the pores of the bark, and the trees die apparently from strangulation. I have had a good deal of trouble in getting a hydrometer suitable for testing oils, and I have brought one here to show you that I got at Mr. Potter's in Toronto, and I made enquiries at a great many places before I found anything as suitable as that. You notice that the specific gravity is ascertained by placing this instrument down into the oil, and the lighter it is the further down into the liquid the oil will go, and consequently register a higher degree. If it is heavy it will stand up so that probably 35 to 40 would be the specific gravity of a heavy oil. Now that has to be taken at a temperature of 60 degrees. Well, here is a thermometer arranged so that you can test the temperature of the oil, and it is also arranged that if the oil registers a greater or a lower temperature than 60 degrees you add or subtract according to the condition.

Mr. MORDEN: What does water 60 degrees register in that?

Mr. FISHER: I have forgotten the decimal, but water is a heavier fluid than oil.

Mr. MCKINNON: The water, I think, is 100 per cent., and then the oil is measured in terms of water.

Mr. FISHER: Well, that does not show those terms. I have seen instruments that do, but it is not necessary to determine that at all for this work, and having the thermometer in connection with the hydrometer makes it very convenient for testing oil at any temperature.

Mr. LICK: That is specially for coal oil?

Mr. FISHER: Yes.

Mr. WHITNEY: Are you aware that the crude oil on the Pacific coast does not contain paraffine, simply asphaltum? They cannot make illuminating oil from it; it is used for asphaltum pavements and for fuel. It struck me that perhaps that kind of crude oil would not be open to objection.

Mr. FISHER: Well, I fancy that if the paraffine were entirely absent the quality of existing re-infestation would also be absent, because is it not the paraffine remaining on

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the trees in small quantities that saves the tree from re-infestation? I think it is. We are not quite sure that Professor Smith is altogether correct in what he says about the proper condition of oil, and for that reason I think that we should try our best oil with care, and if we are not satisfied to use it in the condition in which it comes from the ground, I am told by chemists that we can bring it to the same condition in which it was found in lighter fields by taking the best oil we have and adding the lighter elements—putting in benzine and kerosene in sufficient quantity to bring it to the proper consistency. Now there are a number of questions asked in regard to the oil. A great many people are afraid of it. I have never seen a tree injured by soap, although the soap is very destructive to fruit buds if applied in the winter. If applied before the frosts are over it will certainly kill all the buds on your peach trees. It is well to remember that. But the crude oil is less destructive to fruit buds than soap, but it has been found to be very destructive to the trees. In some sections a great many trees have been killed by it, and in other sections individual trees

Mr. MORDEN: Do you use it in April?

Mr. FISHER: Yes; but not in winter, as I think it will destroy the fruit buds. That has been our experience. If you use it after the frosts are over you will be less likely to injure the fruit buds.

Mr. MCKINNON: Will it injure the fruit buds of other than peach trees?

Mr. FISHER: Well, I put some on my own trees last winter and the buds were not injured at all on apple trees. I have some apple trees that bore a good crop of fruit, and did not seem to be any the worse for the application of oil.

E. D. SMITH: Does the oil damage the tree as badly one season as another?

Mr. FISHER: I think not. I think it is a great deal better to apply the oil in April. I would apply anything in April, no matter what it is you are using. For a winter application I would apply it in April. A question has been asked me very often that I have not been able to answer until I came back: how would the trees be if treated with crude petroleum for a succession of years? And I found one or two instances of that in the course of my trip through the United States, and it all goes to show that when the application is properly made the trees will improve under it. There is an instance in New Jersey where I had some very badly infested pear orchards, that were exhausted through the Scale, that he had been using remedies a long time, and that since the advent of crude petroleum as an insecticide he had so reduced the Scale in his orchard that the trees had recovered their vigor, and last year had borne a good crop of fruit, and are now giving promise of another crop of fruit next year. I think you may accept that. It does not really make any difference whether you use the petroleum diluted or undiluted, because when you use it diluted the water is soon gone and the oil remains. The advantage of the water is merely to assist in distributing the oil so that you can entirely cover the tree with a smaller quantity than you would probably do if you were using the undiluted oil; but those people down in New Jersey, where they have used the oil the longest, say that they prefer to use the undiluted oil because they know what they are doing; they have no pump that they can rely on to give certain results, and most of them have been using the oil undiluted lately.

E. D. SMITH: But now you say that there is a pump that will give a perfect mixture?

Mr. FISHER: I think that pump will give good results, and with the use of water you can use a smaller quantity of oil, and it is certainly safer to use a smaller quantity of oil, and a very small quantity appears to be all that is necessary to destroy the Scale, and that would make the operation cheaper. At Washington I met Professor Johnston, who has been using hydrocyanic acid gas in the orchard on an extensive Scale. He uses a box tent, and claims to have entirely cleaned up 2,000 four-year-old peach trees at an expense of six cents per tree for material and labor. Now, this is not expensive, and if the work can be done at this expense I think it very desirable that fumigation should be carried on here, for the reason that fumigation is much more destructive to insect life and is more searching than any remedy that is in use. It is the last live Scale we are after; that is the chap—(A voice—"That is it")—the one that remains to re-infest the tree, and the trouble with the soap is that it leaves too many alive—that is the only trouble. It is a beautiful thing on the trees wherever it is used; the trees look 50 per cent. better; the foliage is large and fine and the fruit is good. You almost ensure a crop of fruit. It may be looked upon as a perfect remedy against this leaf curl, and I certainly like soap. But

when it comes to San Jose Scale it certainly appears from our experience that it leaves too many alive. The hydro-cyanic acid gas gets after the Scale. Some people claim that in some cases it does entirely clean up orchards, but I do not think we can be very sure about that, though it is altogether the most certain to destroy Scale of the remedies that are in use, and if it can be used at an expense of 6c per tree on four-year-old peach trees it is not by any means expensive. (Hear, hear). Possibly Professor Johnston is a little premature in claiming that he has done this. I met an old gentleman down in New Jersey who said he had no trouble at all to kill the Scale, he said it was nothing to kill the Scale, but he wouldn't say dead. (Laughter). Now, that remark may seem a little out at first, but it is so singularly in keeping with our experience, when we have extreme difficulty in say a month after the application is made to find a single specimen of Scale remaining alive; you may look a long time before you will find them, but they are always there, and at the end of the season they have re-occupied the tree, so that thorough work in treating every Scale is very desirable. At Lakeside, Ohio, I found an orchard of 165 plum trees that was very badly infested with Scale; in fact I never saw so many trees together so badly infested. They had been treated with crude petroleum in April, and there was very little live Scale remaining on those trees. I saw them in November. I think it would be impossible to have a better example of the efficiency of the oil treatment than what was shown on those trees. From correspondence I have had I know that the oil that was used on those trees was a low grade, and I think that possibly we may be able to use our own oil if we use it with due care. A heavy oil indicating below forty is reckoned as low grade. An oil that has a specific gravity of 45, or more, is looked upon by Professor Smith as being safe. You could not have it any better no matter how light it is; it would not be any better if it registered at 45. At Titusville, Pa., there is a light oil field, I understand, where the oil all shows a specific gravity of 50, and that would be a very nice thing if we had it here. I think we could use that oil with perfect safety on our trees, but it is not here. I think the addition of refined oil to crude oil serves the purpose. I have discussed that matter with some of our chemists and they tell me that that could be done. It would be a question of expense, however. The mixture would probably cost more than it would to import oil from Titusville. I was very grateful indeed to the Minister for allowing me to make this trip down there to the United States, because it enabled me to settle some points, which I had not been able to satisfy myself upon. One point was the effect of crude oil upon trees if applied year after year, another was the result from the use of hydro-cyanic acid gas in the orchards, and another was that I might have an opportunity to consult with some gentlemen who could give me information of the existing conditions in California. I met Dr. Howard and asked him these questions, and he told me that in California so far as he knew the people were just as much afraid of the Scale as ever they were; that they have a remedy over there—salt, sulphur and lime—which is useful in their dry climate, but it would not be useful in this country because of our frequent rains, and they have learned that they can rely on this remedy to help them out, and they can control the Scale if they use it; but he said that if they relaxed their efforts for a single year the trees will soon get back to their old condition.

Mr. WHITNEY: Is the Scale there the same as this?

Mr. FISHER: Well, there are a great many different kinds of Scale. Last evening I received a letter from a gentleman in Redlands, Cal., who says that one reason why the Scale is not quite as bad in Southern California as it used to be is that they have abandoned to a very great extent the cultivation of deciduous fruit trees, and that the room has been replanted to citrus trees. Now, the citrus tree is infested with an entirely different Scale, it is a red Scale. It is very similar in appearance to the San Jose Scale, but it is different.

Mr. MORDEN: I have understood that there is a parasite that is operative in California, but that does not care to come so far north to help us.

Mr. FISHER: I will now deal briefly with a few other features of our work. We have already referred to the effect of soap on the trees. As to the effect of oil on the trees, I may say that where the oil has been applied freely the trees will not leaf out for from one to two weeks after they would have leafed out, and we are very apt to think that we have finished them; but they will come on shortly after that, and the leaves will be very large and rank in color, very much in excess of the usual size of the foliage, and they remain through their holes and the perforations of insects that have been killed by

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the oil that has been put on the trees. I have found on several occasions the bud moth and the case bearer in considerable quantity on trees that had been treated, and the leaves on those trees remained entirely free from the mutilations which would have otherwise occurred. This foliage, too, will be retained much later in the fall. The leaves do not come off the trees quite so soon at the end of the season. The injury that the oil occasions to the trees is almost invariably the result of excessive application, as far as I could understand. In regard to the fumigation of trees, I understand that Professor Forbes, in Illinois, has declared against this in orchards as being impracticable. Well, in the last Bulletin that I have seen from California, they say that is altogether the most thorough and satisfactory way of treating trees, and in a letter that I received yesterday reference was made to the fumigation as being the only way that you can satisfactorily treat badly infested trees. It is my wish that there should be some fumigation done here in Ontario that we may see with our own eyes what results can be accomplished by gas. I have been frequently asked what a person can do to protect his orchard that is not infested—what an owner can do to strengthen his position. I think it is very desirable indeed that as great a degree of fertility be maintained in orchards as is possible to have, and in this way you can make your orchard very much more resistive to the attack of Scale than they otherwise would be. The limit between what a peach tree and a Japan plum tree will stand, and what is necessary to kill the Scale, is narrow compared with that in the case of apple and pear trees, consequently these varieties of trees are more hard to treat, and there should be special pains taken to keep up the vigor of a peach orchard, in an infested section especially. This is good practice in any case, but especially in the case of Scale. I have had several examples of the desirability of doing this in orchards, parts of which were so badly infested that the trees were encrusted. The Scale went on increasing all through the fall. An application of crude petroleum, 25 per cent. in water, was made the following February, and almost every tree that was encrusted with the Scale was killed by the oil, while the balance of the orchard which was not badly infested by the Scale was not injured by the oil, but bore a full crop of fruit. One row along one side of this lot was sprayed with undiluted oil and it did not differ in the least from the rows that were treated with 25 per cent. That is, the pure crude petroleum did no harm. I think it is very important that there should be no trees allowed to become badly infested. This is one way in which I would hope to maintain vigor in a peach orchard. The principal breeding season is during the two months from the middle of August to the middle of October, and especially during September. You can readily understand that fruits that ripen before this time in treated orchards are not likely to be infested with Scale, while those that have to remain on the trees until after the principal breeding season is over are likely to be attacked by the Scale; those late ripening fruits are the fruits that the Scale get on, and as early in the season as it is practicably to do so I would like to fumigate those infested trees, whether they be many or few. This is done with a tent made in the form of a box. It is not practicable for very large trees. The size of Prof. Johnson's tent is 5 x 5 x 7 feet. They are square boxes—canvas tacked to a frame; and then there is a hood that rolls up to the top so that if the branches at the top reach up higher than seven feet this hood will allow of it going up and still confining the gas above them. He uses the gas process in destroying the Scale in Maryland to a considerable extent. Prof. Lowe of Geneva, has another kind; it is just the same style of a box, and one side is open. The box is much larger, made in the same proportions, and he gets it over the trees by removing the open side and slipping the tent up and against and around the tree, and then setting in the side and fastening it to its place by buttons. I think that this can be done very nicely, and I will urge the Minister to allow a certain amount of fumigation here in Ontario, that we may understand whether it is for our advantage or not. I am sure that you are all assured of the interest that the Minister feels in this work. I have myself been frequently surprised at the remarks that he has made, and I am in a position to say that he takes a very deep interest in the Scale work. He feels that the interests of the fruit growers are threatened materially, and he would like to do anything he can to assist them, as is evident in many ways, and the pains that he has taken to get information of what is being done in other sections, so that what we do may be right along the most up-to-date lines, and the manner in which he has responded to the call of this Association from the first agitation that there was on account of the Scale.

Mr. MORDEN: Are there any hopes of any parasites that will be useful in Canada? We know the lady-bug will do something.

Mr. FISHER: I am afraid not. Wherever I have been they told me there does not seem to be any material advantage from either rapacious or parasite insects. Trees in Ontario were very well supplied with the lady bird last fall; some trees were swarming with them.

Mr. CASTON: But those do not keep over the winter?

Mr. FISHER: No, they have been so reduced that they do not become plentiful until late in the season again, and by this time the scale has recovered and has far exceeded the condition in which the lady bird left them at the beginning of the previous winter. In regard to these parasitic insects, Prof. Johnston, of Maryland, seems to think that he has found one there that is likely to be useful. It is a fly, a regular parasite, and he suggests that the trees should be pruned before they are fruited, the brush should be covered up and removed but not destroyed until immediately before the scale begin to breed, so as to give these parasites an opportunity to get back on to the trees. The treating of trees after this brush is removed will destroy all of those parasites that remain on the trees, and the only hope of retaining any is by holding the brush as long as possible so as to give them an opportunity to go back on the tree. I understand that in California where they have trusted to insects they have lost their trees; and the further north you go the less hope there is from preying insects; we are not so well situated here as they are in California.

The PRESIDENT: Does this parasitic fly that you would save by pruning, live over winter?

Mr. FISHER: It lives over winter on the trees, like the Psylla, and there is likely to be some of it on the brush, and he wants the trees pruned and the brush removed before the trees are sprayed, and left as long as it is safe to leave it. They breed very rapidly and at different points in Maryland. It becomes a winged insect and has much the appearance of the male Scale.

The PRESIDENT: Mr. Fisher has purposely abbreviated his remarks in order that you may ask questions.

Mr. MORDEN: He has not given us just the appearance of this to a good eye, or to the ordinary magnifier, that we might distinguish it from other Scales.

Mr. FISHER: Well, I do not think that it is possible to distinguish the larva of one Scale from the larva of another, only perhaps by the color. The Forbes Scale is a little bit like it—a light lemon color—and I do not know of any other Scales that have quite as much color as the San Jose. They are very small of course; it takes about 110 or 111 of them to measure an inch when they are put end to end, but you can see them quite distinctly with the naked eye. They run around upon the trees about five or six or seven days according to circumstances. They may fix it sometimes in a shorter time than that, and when they put in their little beak and begin to suck there is a wax starts out from their body, and that, in connection with the cast off skin of the several moultings, forms their home. This is called the cover Scale. Now, the cover Scale of the San Jose Scale differs from the cover Scale of other insects in the distinct dot and ring; you will not find so distinct a ring and nipple in any other Scale as you will find in the San Jose. This in itself is a sufficient guarantee, almost, of the species.

MURRAY PETTIT: Under ordinary conditions how long from the time a tree is first infected until the fruit is of no value?

Mr. FISHER: Well, we have not had experience in that. The badly infected orchards were all destroyed at the beginning of the scale work. The Minister was so anxious that the Scale should be destroyed, that there should be no distribution, that the first thing we did was to go right at it and we burned it up, and there was not any evidence left, and the people did not believe that it could do any harm. I believe the greatest mistake we made was to burn up all of that Scale. If we had left a bad orchard to die before our eyes it would have had a very good effect. The people did not believe the Scale would destroy the trees, so that we really have not a great deal of evidence. But I have seen trees that were not known to be infected in the year 1898; in August, 1899, there was one limb found to be infested on a peach tree, and in August, 1900, half of that tree was dead, the leaves were off on one side and we changing color on the other, and the peaches remained on the limbs and shrivelled and dried. Here is an instances of a tree in which

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Scale was first found in August, 1899, and during the season of 1900 that tree failed to mature its crop of fruit. It blossomed, and the fruit was in the early season just as good as it was on the adjoining trees; but now that tree is made into firewood, and the trees all around there as early as the middle of last summer were infested, and badly infested all round this tree, and in going through the orchard I could find Scale on every tree I looked at. That gives you an illustration of the great disposition to spread. An orchard down through the Niagara District that was known to contain from 5 to 7 per cent. of infested trees, according to an examination made in 1899, has Scale on every single tree in the whole orchard to-day. That seems to be the way that the Scale is spreading. People were surprised on every side by finding their fruit infested with Scale when they came to pick their fruit. Up to this time they did not suspect that there was such a thing as Scale around their premises. I don't wish to make a specialty of the Niagara District. It was just the same in the West. About the end of July in 1899 we counted the apple trees than were infested or that were exposed in one orchard that was reported to be very slightly infested, but upon which Scale could be found at that time; now you can look down the rows from the road as you are driving along in a rig and see the Scale on the trees; and in the orchard first mentioned in which there were Scale in 1898 you can not only see the Scale on the outside of the trees, but away down the road you can see scaly trees, and tell them by the difference in the color of the bark.

MURRAY PETTIT: Does the fruit on those trees show the effect?

Mr. FISHER: Not yet.

MURRAY PETTIT: How long had it been in Mr. Wigle's pear orchard in Essex before those trees were taken out?

Mr. FISHER: I think he said it was four or five years since he bought the trees.

Mr. WHITNEY: I do not know of any Scale in the east. I would like to know how far east it has been discovered.

Mr. FISHER: In the neighborhood of Belleville there were a number of affected trees sold at low prices and distributed throughout that neighborhood. We got a list of the sales of those trees as far as we could and followed them up and destroyed the Scale in quite a number of places in the neighborhood of Belleville, in the County of Hastings, and also in the County of Prince Edward. We have not known it farther east.

The SECRETARY: I think it would be very interesting just in this connection to hear a word or two from Mr. Thonger, because it was in his orchard that we first discovered it, or it was called to our attention, and some of us are present who went down to Mr. Thonger's and found the Scale at his place, and this must have been five or six years ago.

Mr. THONGER: I have listened with very great pleasure to Mr. Fisher's lucid and systematic address, and I believe there is not a word in it but what I can agree with. Mr. Fisher is not a man to jump to conclusions at all, and I am glad to find that after three years' time he has come to about the same conclusion I came to in about three weeks with the practical experience I had. (Laughter.) He is quite right in not jumping to conclusions. When a man has not evidence to come to conclusions on he had better crawl. I do not wish to refer to the past more than I can help, except in its bearings on the present. The question is divided into two distinct issues. There is the physical difficulty in dealing with the Scale, and there is the moral difficulty in dealing with the people who think they have not got the Scale, and those that know they have got it. I think that the great mistake that has been made in this question is that the grounds of equity were not considered in dealing with the matter. I may have spoken very harshly of some people. I have suffered considerably by this issue, and I have laid the blame of the action that has been taken particularly on the officers of the Ontario Fruit Growers' Association. I think they jumped to a hasty conclusion. They thought that they had got the scale in a few places, and it was all in their hands, as it were, and all they had to do was to destroy it. I do not think sufficient attention was given before that Act was passed to see how far the scale had spread in the country. The conclusion I came to before the Ontario officials came out there at all was that the condition of my orchard was very likely to be the condition of every orchard in the country. I had no reason to believe otherwise. I could not trace the introduction of the scale to any particular trees in my place. They were just as prominent on the old trees as the young trees, and I came to the conclusion that it must have been imported in

trees in orchards that were far older than mine were, and the owners had never noticed it. I should not have seen it but I was going through an orchard of pear trees which I pass almost daily, and on one of them I noticed something like a fungus growth which did not look very nice, but I did not take particular notice of it. I passed again and found it was spreading, but I was not thinking about the San José Scale at all. I thought we were so amply protected by the knowledge of that Scale that was threatening us that it could hardly settle on my place without the officers catching it by the ears. (Laughter.) It looked like ashes on the trees, on the trunks mainly. If the trees had been infested from the nursery it is very apt to be infested on the trunk, but on other trees I should say it was infested on the branches. These trees were infested on the trunk, I think, but I did not look carefully into it. I did not know it was so excessively small. The next spring it was badly spread again and I asked the men who were working among the trees if they had recognized the thing at all, and they said no; and when two people did not know it I thought it must have been the San José Scale. I sent it to Niagara and they sent it to the *Rural New Yorker* to see what it was. A great many people censured me for saying anything about it. In a few days I heard from Mr. Fletcher at Ottawa. He wanted to know how many trees I had infected. I knew very little about it. I did not know how it spread. I did not know whether it had eggs or how it did, and I sent him a few samples and things I found on the trees that I thought might be it. Well, they were not it. I examined the trees the year after this and found it had spread considerably more than the year before. I pruned my trees considerably, and after that I made a systematic examination through the orchard, beginning on the west side and going up and down the rows. I spent three days at it and marked every tree on which I discovered Scale, so as to decide where the centers of infection were and what the state of infection was, and that would be the state of things when the committee came down to see it. I had a great deal of experience with Professor Fletcher. I destroyed some of the worst infected trees according to the recommendation. I came to the conclusion that the professor had made rather a mistake in advocating the destruction of the trees. I feel that if we cannot deal with the worst infested trees by manual treatment we cannot deal with it at all, and if we begin to burn in one corner of it we must burn in the other. I think the remedy of burning is perfectly fallacious. I think the scientists should have made the distinction that it is far better the trees should be burned than not treated at all, and I think if a person knows his trees are infested they should do everything to cure the evil for their own interests as well as that of other people. When people indulge the mania of destruction in the interests of their neighbors it is quite another thing. I wanted to get rid of the infested trees. I did not like to destroy them because I thought they were valuable property. The scale was there and known to be there, and sure to be investigated and treated and made the best of. I should have felt I was doing the Province an injury to deprive them of the advantage of treating this terrible pest. I said to Mr. Fletcher that if they did not do something soon I should have to destroy the trees. I asked Mr. Fletcher that they should place a good brand of soap on my trees at once, but they were able to do nothing. I saw the thing was so serious that Mr. Fletcher or someone ought to have come almost immediately to my orchard to see what it was and that means were taken to suppress it, and I thought the Ontario fruit growers, when they found it was in the country, would look after it at once. Their anxiety would be to know what means I was going to use to get rid of it, and if I had means to get rid of it. I think the great question is whatever measures are decided upon they must be founded in equity. The mistake was made by the fruit growers in thinking that I was among the very small minority and that it was perfectly safe to neglect my claims for recommendation of right dealing.

Mr. MORDEN : Was the twenty-five per cent. payment equitable ?

Mr. THONGER : No ; no percentage is equitable.

The SECRETARY : You think the whole thing should be paid for ?

Mr. THONGER : Yes ; the best thing would have been to leave the matter to the courts of justice, where disinterested parties would decide what the real value of the property destroyed was. The mistake of the fruit growers was that they made their societies courts of justice. They complained against the people who had property lost or destroyed, and they judged their own case when they should have left it to a court of justice to settle what the damages should be.

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APPLE BARRELS.

The SECRETARY read a letter from S. C. Parker, Secretary of the Nova Scotia Fruit Growers' Association, and introduced to the notice of the meeting two barrels, one which has been used by apple shippers for years in Ontario, the other proposed by the Nova Scotia Fruit Growers' Association, which is a smaller one, and which has been adopted by the American Apple Shippers' Association, which has declared they will not use any other barrel in foreign shipment. The Nova Scotia shippers use the American barrel, because they ship it to Boston and thus compete with the American barrels, and last year they united with us in asking that it be made the legal barrel of the Dominion. Some of us in Grimsby have been using that barrel this year, expecting it was to be made a Dominion barrel. The dimensions of the barrel are: Staves, 28½ inches long; head, 17½ inches; circumference at bilge, 64 inches. This barrel holds 96.51 imperial quarts or 100 American quarts, while the flour barrel we have been using measures as follows: Staves, 30 inches long; head, 17 inches long; holds 103 imperial quarts.

E. D. SMITH: Can you tell us whether this barrel is the only legal barrel to be used by the United States?

The SECRETARY: I do not think the Government has ever established it, but the apple shippers are the controlling factor there.

E. D. SMITH: The Canadian barrel holds about two bushels and three pecks. If the stave manufacturers don't make any trouble about it and are willing to furnish these new sizes of staves at the same price as the old ones, I should say we should use the barrel that is used by the United States and in Nova Scotia.

A. H. PETTIT: I want this barrel, on the ground that it is a better barrel. When you pile up those barrels you will find that the bilge scarcely touches. This will rest more on the bilge. Now when you pile your barrels three or four in a car and they have to teeter through to the port of shipment, they have got to be put down in the boat and run that way across the ocean, I want to know which has the prospect of getting the most damaged; fruit in the shorter barrel that rests on the quarter hoops, or the one that rests on the bilge? What are we doing in all the branches of the fruit trade to-day? We are getting smaller packages. What for? Better condition of arrival. If this barrel will give us a better condition of arrival, that is what we want. I am inclined at the present time to use the smaller barrel. I believe we will find it to our advantage in the end to do so. I notice in the reports of the Nova Scotia barrel they have not the amount of slacks that the Ontario people have. Is this the remedy? I will move "That in the opinion of this meeting it is wise to adopt the uniform standard of barrel as used in Nova Scotia and the United States."

Mr. WHITNEY seconded the motion, which was carried.

Before the meeting adjourned the following committee of the Association was appointed to consider the sizes of fruit packages that should be adopted in order to secure uniformity throughout Ontario, namely: Grimsby, D. J. McKinnon, A. H. Pettit, L. Woolverton; Winona, E. D. Smith, M. Pettit, T. H. P. Carpenter; Burlington, Wm. Fisher; Fruitland, W. M. Orr; Beamsville, S. M. Culp; St. Catharines, W. H. Bunting, Robert Thompson.

The meeting then closed.

REPORT OF THE FRUIT EXHIBIT COMMITTEE, 1900.

Your Committee on Fruit Exhibits begs to make the following report:—The fruit exhibit this year was a creditable one and the specimens shown were, most of them, of good size and shape for the varieties they represented. The apples from Niagara Peninsula were not as well coloured as usual, owing to unfavourable weather, and while those from Eastern Ontario were better coloured they also were not as highly coloured as usual. A good collection of fruit adds greatly to the interest of the meeting, and it is hoped that this good practice will be kept up. This is a good opportunity of having the merits of new or little known fruits discussed and brought before the notice of the prominent fruit growers of Ontario.

One of the largest collection of apples was shown by Mr. E Morris, of Welland, Ont. Most of the varieties were comparatively new to this country, which added much interest to the exhibit. Honsley's Winesap is an apple of fine appearance and good size, but cannot compare with the ordinary Winesap in quality. The specimens of Gano shown were very fine and well coloured. There was also an exceptionally good plate of Ben Davis. One hardly recognized Salome, it was so pale, there being only slight traces of red. The specimens were, however, of good size. York Imperial and Sutton Beauty, two apples much thought of in United States, were also good. Other varieties, of not particular merit, were Dickinson, Matamusket, Clayton, Huntsman, Western Beauty, Red Riches. There were also specimens of Bottle Greening, Winesap, Swayzie Pomme Grise, Limber Twig, and Cooper's Market.

Mr. Harold Jones, of Maitland, Ont., brought some fine Fameuse and Scarlet Pippin. The latter variety does particularly well with him. It is a very handsome apple and is said to sell well. He also had some good specimens of Ontario, Ribston Pippin, McIntosh Red, and Milwaukee, the latter being a new variety of promise for Eastern and Northern Ontario.

Some fine apples from Bruce county were shown by Mr. A. E. Sherrington, Walkerton, Ont., his Ontarios, Kings, Northern Spys and Manns being all fine. They offered very good evidence of Mr. Sherrington's contention that Bruce county is the best apple growing county in Ontario.

A curiosity in the form of a seedless apple was shown by Mr. W. A. Whitney, Iroquois, Ont. The apple was quite normal in appearance and of a good size. Mr. Whitney says that none of the apples contain seeds. Some very fine specimens of Wolf River apples were also shown by Mr. Whitney.

A collection of thirteen varieties of apples was brought by Mr. W. T. Macoun from the Central Experimental farm, Ottawa. Those of most interest were La Victoire, Spencer, Milwaukee, and Kinnaird. The first mentioned is a fine looking apple which originated near Calumet, Que. It is of good size and very regular. The quality is rather good also. Spencer is a very handsome apple but rather coarse. Kinnaird is a late keeping variety of good quality which is quite hardy at Ottawa. Milwaukee is a seedling of Duchess; a large, handsome apple bearing early and heavily and keeping until February or March.

Mr. W. C. Reid, Belleville, Ont., had some good specimens of Akin Red, Winter Banana and an other variety thought to be Rome Beauty.

An interesting collection of apples and pears was shown by Messrs. Smith and Reid, St. Catharines, Ont. Among the pears were Anjou, Kieffer, Josephine De Malines, Lawrence, Bearre Diel, Mount Vernon. Mr. A. M. Smith nearly always has some fine specimens of Princess Louise apples. Owing to the unfavourable autumn they were not as well coloured as usual this year.

The President, Mr. W. M. Orr, as usual, had some fine Vergennes grapes. Mr. Orr makes a specialty of packing these grapes in cork dust for winter use, and they are certainly good. He also had some immense specimens of Kieffer pears and some fine Idaho pears as well, likewise some fine quinces. Included with his exhibit were some exceptionally late peaches grown by Mr. Morrison.

Mr. P. McCullough, Burlington, exhibited a collection of well shaped and well coloured apples. Those which were particularly good were Ontario, King, Esopus Spitz-enburg, Gano, Pewaukee, Hubbardston Nonsuch, Mann, Blenheim Orange, and Baldwin. The apples shown by Mr. McCullough were very creditable to him.

A very highly coloured and fine specimen of McIntosh Red was brought by Mr. Macoun, which had been grown by Mr. David Tait, Iron Bridge, Algoma. If such fine apples can be grown in abundance it will be a great boon to that part of Ontario.

Mr. C. L. Stephens, Orillia, sent a yellow apple for name which very much resembled the Porter. Another variety, sent by Mr. E. Powell, through Mr. Stephens, grown on the grounds of the late John Ouppage, Orillia looked as though it were of Russian Origin, but was unknown to the Committee. A variety which resembled the Seek no-Further in outward appearances, but which was not that variety and evidently a seedling, was sent by Mr. Stephens. It was grown by J. W. Wainman of the Township of North Orillia, and said to be from a sucker grown from a dead Northern Spy, evidently the stock. It was a fine looking apple and a good keeper and is worth giving a thorough trial.

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Some specimens of a dark coloured seedling apple were sent by Mr. H. Wartman, Kingston, Ont., to Mr. L. Woolverton, who brought them to the meeting. The apples were of medium size and unusually dark in colour, being very dark crimson. The flesh was white, tinged with red near skin, tender, and juicy and subacid, but slightly astringent. Quality, almost good. The tree is ten years old and growing along a public road. There were two barrels of apples on it in 1900. Season, midwinter.

The members of the Association were very much surprised by the fine specimens of Navel Oranges, and lemons which were grown at Victoria Park, Niagara Falls, by Mr. R. Cameron, Superintendent of the park, and sent to the Association by him. The oranges were as large as imported ones and were quite juicy and thought to almost equal the best in flavour. The lemons were also good. The trees were grown in half barrels which were kept inside in the winter. When such fine oranges and lemons can be produced in this country it is surprising that more persons do not produce them of the same quality as those grown by Mr. Cameron.

There were a few other collections, but as the name and address of the exhibitor was not attached they are not reported on.

W. T. MACOUN, Chairman.
W. H. DEMPSEY
T. H. RACE.

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.

No. of
members.

51 E
69 E
59 C
123 C
72 C
... C
54 C
96 I
55 E
67 C
94 C
73 E
158 E
58 E
50 I
88 F
86 I
114 I
119 I
81 M
57 M
60 M
72 M
64 N
68 N
52 N
108 C
83 C
63 C
76 C
... F
57 F
103 F
50 F
81 F
110 F
85 S
79 S
89 S
59 S
58 S
59 T
85 T
159 V
100 V
114 W

LIST OF AFFILIATED HORTICULTURAL SOCIETIES.

No. of members.	Name.	President.	Secretary.
51	Belleville	W. C. Reid	W. J. Diamond.
69	Brampton	O. M. French	Henry Roberts.
59	Cardinal	R. B. Dowsley	E. E. Gilbert.
123	Chatham	Thomas M. French	George Massey.
72	Cobourg	John D. Hayden	H. J. Snelgrove.
	Cayuga	J. E. Skeele	A. K. Goodman.
54	Clinton	Alex McKenzie	Wm. Coates.
96	Durham	Chris. Firth	Thomas Brown.
55	Elmira	S. Laschinger	C. W. Schierholtz.
67	Grimsby	Mrs. E. J. Palmer	E. H. Read.
94	Guelp	Dr. Dryden	Wm. Ross.
73	Hagersville	Wm. Harrison	S. W. Howard.
158	Hamilton	A. Alexander	J. M. Dickson.
58	Hespeler	John Fisher	D. Rife.
50	Iroquois	W. A. Whitney	A. E. Overell.
88	Kincardine	S. W. Perry	Joseph Barker.
86	Leamington	J. L. Hilborn	E. E. Mackay.
114	Lindsay	W. M. Robson	F. J. Frampton.
119	London	J. A. Balkwill	R. W. Rennie.
81	Meatord	Oscar Boden	A. McK. Cameron.
57	Midland	F. R. Weston	Miss M. Tully.
60	Millbrook		George Sootheran.
72	Mitchell	A. D. Smith, M.D.	T. H. Race.
64	Napanee	Mrs. W. H. Wilkinson	J. E. Herring.
68	Niagara Falls	W. P. Lyon	T. J. Robertson.
52	Norwich	J. D. Hogarth	Wm Fairley.
108	Oakville	A. D. Chisholm	W. W. Paterson.
83	Orangeville	John McLaren	Wm. Judge.
63	Owen Sound	Dr. Allan Cameron	James Vair.
76	Orillia	G. I. Bolster	O. L. Stephens.
	Perth	W. A. Meighen	A. W. Goodman.
57	Paris	John Allan	Gordon J. Smith.
103	Pictou	A. M. Terrill	W. T. Ross.
50	Port Colborne	A. E. Augustine	O. C. Kanold.
81	Port Dover	James Symington	Mathew Hodge.
110	Port Hope	H. H. Burnham	A. W. Pringle.
85	Seaforth	Wm. Ballantyne	Valentine Knechtel.
79	Simcoe	H. H. Groff	Henry Johnson.
89	Smith's Falls	J. S. McCallum	W. M. Keith.
59	St. Catharines	G. W. Hodgetts	D. O. Hetherington.
58	Stirling	Mrs. James Boldrick	G. L. Scott.
59	Thornbury	John G. Mitchell	A. W. Walker (Clarksburg).
85	Toronto Junction	F. C. Colbeck	W. H. Post.
159	Waterloo	Andrew Weidenhammer	J. H. Winkler.
100	Woodstock	G. R. Patullo	J. S. Scarff.
114	Windsor	Stephen Lusted	John R. Martin.

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