THIRTY-FIRST ANNUAL REPORT

OF THE

FRUIT-GROWERS' ASSOCIATION

OF

ONTARIO.

1899

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To the Honorable John Dryden, Minister of Agriculture:

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

I am, Sir,

Your obedient servant,

L. WOOLVERTON,

Secretary.

GRIMSBY, January, 1900.

FRUIT GROWERS' ASSOCIATION OF ONTARIO.

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LINUS WOOLVERTON, Grimsby.

MR. W. M. ORR, FRUITLAND.

PRESIDENT OF FRUIT GROWERS' ASSOCIATION, 1900.

PACKING APPLES FOR EXPORT, IN THE ORCHARD OF MR. PAY, ST. CATHARINES, ONT.

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FRUIT GROWERS' ASSOCIATION OF ONTARIO.

ANNUAL MEETING.

The thirty-first annual convention of this Association opened at Whitby on December 5th, 1899.

W. M. ORR, Vice-President, said: Gentlemen,— In the absence of our efficient President, Mr. Wellington, who is in Europe, it becomes my duty to take the chair and call this meeting to order. I am glad to see so many directors present with us, but very sorry indeed that we miss some old familiar faces, unfortunately through sickness. You will see by the programme there is very important business to come before us. The question of the San Jose scale, the fraudulent packing of apples, and many other topics of interest are on the programme. I am sure they will have your very best consideration. I will ask the Secretary to read some correspondence.

Secretary WOOLVERTON: In addition to the letters that were read last night at the meeting of the Board of Directors explaining the absence of some of our directors—Mr. T. H. Race, of Mitchell, A. M. Smith, of St. Catharines, and two or three others who could not come on account of illness, I have also a letter from the Minister of Agriculture for the Dominion in response to a resolution that was passed by this Association a year ago asking that Mr. Orr be added to the staff of representatives at the Paris Exposition to assist in seeing after the interests of Canadian fruit growers. I have also a letter from Auguste Dupuis regarding fruit for the Paris Exposition. I have a letter from W. W. Dunlop, Secretary of the Montreal Horticultural Society, and one from A. McD. Allan, regretting his inability to attend this meeting of our Association.

Mr. POWELL, Ghent, was introduced and said: It certainly gives me pleasure to meet with you at this time and to bring greeting to you from the fruit growers of New York State. I feel that certainly we have a very common interest when we come to consider the extent and the magnitude of the work of horticulture, and I am always delighted to meet with those who are making horticulture their study and their life work. It represents to us I think the very best line of work. It represents to us I think the very highest of promise for the reason that it is attended by so many difficulties; and I find that any business that is attended by great difficulties calls out the very best that there is in men. You are not the men who give up to difficulties, but you meet them and are determined to solve them; and that is why I say that the future promises to fruit growers and to horticulturists so much, because of the determination to surmount difficulties. For that reason the future promises great in fruit culture, for the demand is for the finer and finer product continually. We all know from our own personal experience that when we go into the markets of the world to-day, or even into our home markets, there is a steady growing demand for a finer product; and that calls for special effort and for particular study on our part to overcome the difficulties of learning fruit culture in the control of injurious insects, in the control of all the fungus life that is making such inroads upon the value of our fruits; it calls for constant study and application of scientific knowledge and principle in our work in order to bring it to the highest standard of quality that is this day required. So it gives me very special pleasure to meet with this body to-day represented in your Association, because I know that you are men who are at the front in the study, and also are aiming at good practice in your work. It will certainly give me very much pleasure to meet with you through all the sessions of your meetings as far as time will possibly admit. (Applause.)

COMMITTEES.

The following Committees were then appointed:

NOMINATIONS: G. C. Caston and J. S. Scarff (by the President), and R. B. Whyte, W. H. Dempsey and R. L. Huggard (by the meeting.)

FRUIT EXHIBIT: W. H. Dempsey, E. Morris and C. W. Van Duzer.

RESOLUTIONS: Thos. Beall, A. H. Pettit and W. A. Whitney.

HARDY FRUITS ALONG THE ST. LAWRENCE.

BY W. A. WHITNEY, IROQUOIS.

It is well known that the vicinity of bodies of water is favorable to fruit production. For instance, the Niagara peninsula, situated as it is with Lakes Erie and Ontario and the Niagara River on three sides of it, is highly favorable to fruit raising, while places farther west in the same latitude are less favorable. The valley of the St. Lawrence, though lying farther north on both sides of the 45th parallel of latitude, is considerably tempered by the river, which has an average width of 1½ miles and is open all winter for a great proportion of its length, owing to the swift current and rapids. An important point is that the water comes to us from the great lakes in a warmer region. The thermometer indicates a lower temperature a few miles inland than along the river banks. While orchards are very few in number and sickly in appearance in the northern concessions, almost every farmer near the St. Lawrence can and does raise a good orchard.

A good proportion of the soil is a gravelly loam, which proves favorable to fruit trees even without underdraining. And even on heavy clay soil I have seen trees still bearing which must have been 70 or 80 years old. It is claimed, and I believe justly so, that such fruits as we can raise along the St. Lawrence are superior in quality and in keeping properties to the same kinds raised in the West. The Snow apples grown on Montreal Island are the finest in the world.

Experience has taught our fruit growers to be content with but a few varieties. In the past, smooth-tongued tree agents, with their wonderful cuts of large fruits, succeeded in imposing upon the unwary. A rapid growth and an early death was the inevitable result. We are now content with the survival of the fittest in fruit. I think it advisable for the present to recommend only varieties of known hardiness and productiveness. Several of the newer varieties are giving great promise, but I dare not make any definite statements just yet as to their subsequent worth.

I would suggest the following varieties in the order named for productiveness and commercial value, viz.:—

Summer: Yellow Transparent, Duchess and Red Astracan.

Early Winter: Fameuse, Scarlet Pippin, McIntosh and Wealthy.

Late Winter: Scott's Winter, Salome, Seek-No-Further, American Russet, Yellow Belleflower, Ontario, Talman Sweet, Canada Red.

Perhaps I might include the Pewaukee and the Ben Davis, but I would prefer to wait till further testing.

The main dependence is on the Fameuse, or Snow. Its good qualities are its hardiness, its fine flavor, either for cooking or dessert, and commercial value. It does not fall easily by high winds. It is in good demand. But it dislikes a low, stiff soil. This objection is obviated by underdraining. Fully 80 per cent. of our apples are Fameuse.

The McIntosh originated in my own township—Matilda, in Dundas county. It is, with us, one of the hardiest kinds. Its large, luscious fruit leaves little to be

desired. It keeps far into the winter. But it drops badly before picking time, and no apple suffers worse from the black spot. Spraying, which is now fast growing to be a necessity in the St. Lawrence valley, will make the McIntosh an almost ideal apple.

The Duchess, as elsewhere, is perfectly hardy along the St. Lawrence. It is not largely cultivated, however, for it ripens too early and keeps so poorly that the market is soon glutted. It is too sour.

The Ontario has been fruited with us, and the tree gives promise of being hardy. It is hoped that another good winter sort may be added to our list, but it would be rash to plant largely till a further test is made.

The Pewaukee has won great favor so far at Lancaster.

The Scarlet Pippin is another promising apple. Fruit has been sold in Montreal this fall at $5 a barrel, and more wanted.

The Wealthy is very hardy, does not spot, and bears heavily, but, unless it is severely thinned, it drops its fruit, and the apples are small. Its flavor is not agreeable to all.

The Talman Sweet may be considered fairly hardy.

Other kinds are being tested, and some of them may prove worthy of finding a place in the half-hardy list. and perhaps in the hardy list. A few of the tender kinds are doing very well where they are top-grafted on selected native stocks.

Pears are not successful. The Flemish Beauty and Keiffer are tried more than any other varieties, and in sheltered spots will live to be well grown and will bear fine fruit.

It is not safe to plant the pear for commercial purposes. There may be possibilities in future from Russian varieties and other hybrids. Cherries do better than pears, but there are few planted.

Grapes of all kinds do well, but there must be careful protection in winter. The low price at which western grapes are sold forbids our raising them for market, owing to the expense of covering the vines well with earth in the fall. Last winter I failed to cover a part of my vines. The result was no fruit this year, but vigorous new shoots grew and I may have a crop next fall. Only the earliest maturing kinds are desirable, such as Concord, Worden, Delaware, Moore's Early, for fear of early frosts.

In strawberries our most satisfactory kinds are Crescent, Wilson, Manchester, New Dominion and Bubach. We have tried many kinds, but all have some lack, and some lack all good qualities. Although the same holds good of all fruit it is more especially applicable to strawberries, and that is that a variety that does well on one kind of soil may not do so well on a different kind of soil in the same vicinity.

Plums are a very uncertain crop. The trouble is not so much in the hardiness of the trees as in the thawing and freezing in March and April, which injures the blossom buds, and perhaps in the cold, east winds in spring. Our best kinds are Lombard, Saunders, Glass Seedling and Yellow Egg. The Ritson cannot stand our winters. Japanese plums are still in the experimental stage.

In Black Caps, Older and Conrath have both proved hardy without protection. Gregg is tender and Columbia does not seem quite up to the mark either in vigor or hardiness.

In raspberries the Cuthbert is mainly planted, but it suffers from frost at the tips.

In treating on fruits hardy along the St. Lawrence. I have tried to rely mainly on my own experience. It may differ from the experience of others in other parts of the St. Lawrence valley. It is not well to be arbitrary in our opinions, but to be open to conviction.

I would close by saying that I have just seen again the report of the Ontario Fruit Experiment Stations, and that I think it is very reliable.

Mr. E. MORRIS: Do you find the Scarlet Pippin as hardy and productive as the Fameuse and McIntosh Red?

Mr. WHITNEY: It is not as well tried as the others, but so far as we have tried it we find the tree very reliable. Mr. Harold Jones, who is present, is a better authority on that than I am.

The SECRETARY: Yes, he is the originator.

Mr. HAROLD JONES: I have four or five specimens of the apple at the hotel which I did not bring to the meeting. With regard to the character of the trees and fruit I might say that the tree is upright, perfectly hardy in root, branch and fruit. I have never suffered from winter injury at any time, and never failed to get a good crop. The tree is inclined to bear every other year, but with careful trimming we can get an annual crop. The season of the fruit is the same as the Snow. It is at its best during the latter end of November, and it is also good all through the month of December. The color I think is a brighter scarlet than either the Fameuse or the McIntosh Red, and it seems to take the eye quicker than either of those apples—I don't know why. Place the Fameuse and the McIntosh Red and the Scarlet Pippin all on the same market, and the Scarlet Pippin goes first and goes at good prices, and it seems to give excellent satisfaction where it has been taken in by private families. It is not free from fungus diseases, but it is not as subject to the scab as the Fameuse or the Snow. It is a chance seedling.

Mr. G. Y. SMITH (Whitby): Is it sour?

Mr. JONES: It is mild sub-acid.

Prof. MACOUN (Ottawa): I brought some specimens of the Shiawassie Beauty with me. It is a great favorite with me. I have had it fruit at the farm three or four years. It is one of the most promising apples for family use. It is very much like the Fameuse, but larger, and the color is better with us at Ottawa, and the tree seems hardier, and altogether I think it is one of the most promising apples we have. It is a very heavy bearer, but bears every other year. We have them up to the middle of January.

The SECRETARY: Have you any difficulty about it dropping? I have found it inclined to drop.

Prof. MACOUN: Our experience was that it hung on the tree better than any other variety in the orchard. There was scarcely a windfall all summer.

Mr. MORRIS: Have you the Scarlet Pippin?

Prof. MACOUN: We have some young trees that have been in three years, and they are among the healthiest we have in the orchard.

Mr. JONES: I might say that the Ontario apple is decidedly in the experimental stage with us. I see Mr. Whitney says there is one orchard man who has taken to planting 200 trees in the spring. I am afraid I am the victim. I will plant 200 trees, but I am planting largely every year any way, and if I should experiment with 200 trees in a commercial orchard it might not be so great a loss to me as it would be to other people who just want to plant one orchard with good stock. Although I intend to plant 200 in the spring, I must say the Ontario apple is in an experimental stage as yet; its hardiness is not proved.

Mr. E. MORRIS: I want to warn fruit growers about one failing of the Ontario—that it dies in the top. If it were not for that it would be one of the best apples we have. I have heard it spoken of as one of the best exporters there is; in fact, when taken to England people will buy it for Northern Spy if not told the difference.

Mr. MACOUN: I would like to call attention to the Milwaukee, a comparatively new apple, fruiting for the first time in Ottawa this year. I think it will keep in good condition till the first of February, and I think it is a heavy bearer. It is a seedling of the Duchess. It is an acid apple.

The CHAIRMAN: I would like to ask Mr. Whitney how he would propose to

thin fruit in the blossom. I think that is one of the most important questions we have before us in regard to fruit growing. Our plum trees and many of our trees set two crops instead of one, and very often the tree is ruined by growing too heavy a crop. If we could control it in the blossom I think it would be a grand thing for fruit growers.

Mr. WHITNEY: I think it is not a very difficult matter with one pair of proper shears to go through the tree and clip out certain spaces just as little as of the twig as possible, just the blossom, and a man would go through a large number in a day. There is a great advantage in thinning the blossoms instead of the fruit, because if you let the fruit grow to the size of a walnut or hickory nut it so far exhausts the tree and exhausts the fruit buds that are then forming for the next season; and it seems to me if it costs more to do it in the blossom that it would pay, because it would be less exhaustive to the tree. I think that would be a strong argument.

Mr. GRAHAM: Would it not be well to have extra pruning? Has it not been stated that to produce a blossom was very hard upon the tree, even as bad as if it was killed by frost?

Prof. MACOUN: The thinning would consist in killing the blossoms. You do not know beforehand what kind of a crop you are going to get. Sometimes flowers set very well, but you do not know how the fruit will turn out.

The CHAIRMAN: Very often the heavier the bloom the less the fruit.

Mr. PATTISON (Grimsby): I have always understood that it was the ripening of the seed that was the strain on the tree.

Mr. CASTON: This was advocated both in the United States and here in our horticultural journals. Perhaps Mr. Powell can give us something.

Mr. POWELL: The question of thinning has been very carefully experimented in New York State, particularly at our experiment stations. So far the effort has been confined largely to thinning the fruit, and while the expense is considerable, yet in every experiment that has been tried it has proven to be an exceedingly profitable operation. When the fruit is set, then you have the entire control in your hands. You can detect much of the defective fruit, and with the same clippers or shears that you would prune the blossoms you can prune away the defective fruit and leave your finest fruit upon the tree. There, I think, would be the advantage in pruning away the fruit rather than the blossom. The point that was made by the gentleman in relation to pruning is a good one. I think we fail very much indeed in sufficient pruning of our trees. By judiciously cutting out each year all the different varieties we can maintain a better uniformity all through the trees in the distribution of the fruit upon the tree. Now we are carrying too much wood. There is too much vitality expended in carrying wood upon our orchards. We could save by judicious pruning, thinning out, more properly cutting out, and thereby reducing the expense of thinning out, by a systematic judicious plan of cutting away the wood. I think one reason of our failure in plums is that they set altogether more than they can possibly carry. Now, if we would reduce perhaps from a quarter to a third of the wood in each of our plum trees we would save that very heavy drain on the trees, and we would get stronger, more vigorous, healthy trees that would carry a much finer quality of fruit. I think that the judicious pruning of the wood is one of the first and most valuable things to do. Then after that go through with the pruning shears and take out as far as possible all defective fruit. (Hear, hear).

Mr. TWEEDLE (Fruitland): I agree very heartily with the remarks of Mr. Powell on that point. I believe that the great amount of surface at the time of the bloom requires a great deal of vitality to keep it in perfection and set its fruit; and I think we have an old saying that the heavier the bloom the less fruit we have, and experience seems to bear that out in my case. Last year I

had an orchard of pears, a perfect sheet of white. We only got 40 baskets off 120 trees capable of bearing half a dozen baskets each tree. It seems to me it defeated itself, although we pruned it considerably. I think the pruning ought to be done earlier. If we cut off the bloom we are cutting off some of the vitality, as Mr. Powell has said. I recollect leaving some plum trees in the nursery till after the delivery season was over, and then we headed them back and the consequence was in the fall those trees did not weigh more than half what they did, and any person could go along and tell the difference in the weight as well as the growth. They were light and without sap. The late pruning had destroyed all the vitality of the trees. We had cut it off; it had gone. It was expended in the top of the tree, and to a great extent destroyed the whole growth. We want to do a large part of our pruning in the orchard early in the season. A great deal of pruning in our section is done by climbing up a ladder and getting around the inside of a tree and cutting out large branches and not cutting out the proper part of the tree. We do it by a different plan. We take our horse and rig, and with a platform we take our pruners and saws and get right out under the part of the tree that is bearing the apples, and thin out smaller branches, twigs, all through—thin out so that there is no branch nearer to its next neighbor than a foot or so. In that way we prune where we ought, and get the light and air through the bearing part of the tree. Then, I believe, in leaving the fruit in the crotch of the tree so that we don't have a lion's tail out on the branch. We might as well have our fruit distributed down the centre of the tree, and get a great deal more fruit without destroying the tree.

GEO. E. FISHER: I would be glad if Mr. Tweedle would give a date at which in his opinion apple trees should be cut.

Mr. TWEEDLE; I would prune about the latter part of March or the first of April in our section in order to get the best results.

Mr. MORRIS: I think a full session could be devoted to this subject. I differ from the last speaker as to the time of pruning. About the first of August the growth of the tree is about at a standstill; you thin it then and you have more fruit-buds, and more healthy buds. I would not thin out the big branches, and make long slender branches with an open centre, as I have often seen people do. A year ago I saw a full orchard destroyed by a man who knew nothing about pruning. He sawed out the large limbs through the top of the tree, left them all open, with the result that the sun came and struck the tops of those large limbs and killed half of them, and I believe almost destroyed that orchard for good. My plan of pruning, instead of taking out those large limbs, would be to cut them back on the outside. Keep your trees more compact, and run them up if you will, but do not let them spread out in long limbs and leave the sun get down to your big limbs on the inside. Even if it does not kill the bark right through, it has a tendency to stop the free flow of sap, and injures the tree very much. I remember some years ago that I read in the *Horticulturist* that May and June was the proper time to prune trees. I will just state that you cannot put a ladder or step on a limb in the month of June but what you are loosing the bark and causing a dead spot right there. It is all right if you can do it from the ground, but you must not step or put anything against a limb at that season of the year.

Mr. WHITNEY: I think the whole matter hinges on when the fruit-buds are formed. I think they are formed about the time the green buds begin to start.

Mr. JONES: I have tried to watch the development of the fruit-bud of the apple the last three or four years as carefully as possible, and as nearly as I can follow it, it commences to be built up shortly after the foliage unfolds in the spring. In our district that is about the first week in May; and I find that by the 20th or 25th June, or 1st July, that the fruit-bud for the next year seems to be fully built up in all its parts. But then if you take the bud and roll it in your

thumb it will roll right out; it is full of sap. It is fully built up, but is not ripened at all, and it seems that from the 1st July until the middle of September that the bud is ripening and drying out and getting hard and firm, getting free of sap so as to withstand the frost of the coming winter. If you take a bud off a tree now you will find it is quite hard, and if you rub it between your fingers it will roll—you can't crush it down, and it is quite dry, you could cut it in two with a knife and then roll it out. I think I am correct in my observation, but I have had no one to help me in the matter.

The CHAIRMAN: This matter is very interesting, and I would like to hear another half hour's discussion, but time forbids. I would like to say that in regard to grapes growing on the St. Lawrence Mr. Whitney missed a grape that probably would suit him better than any others, that is the Worden.

Mr. WHITNEY: I have the Worden, but really forgot to mention it.

Mr. CASTON: Is it ten days earlier?

The CHAIRMAN: Yes, I think every grower here would bear me out in that and it is a very good grape.

PEARS FOR THE PROFESSIONAL AND AMATEUR GROWER.

By E. C. BEMAN, NEWCASTLE.

Pears adapted to the use of the professional and amateur grower, call for entirely different qualities. The professional grower is growing for profit, and the varieties must be adapted to that purpose. The tree must be a fairly good grower, sufficiently hardy and healthy to endure the climate and also productive. The fruit should be of good and uniform size, fine showy appearance, and of fairly good quality. It is also advisable to select varieties that are not subject to spotting or scab and other diseases.

On the other hand, the amateur grower wants, first of all, superior quality and handsome appearance, size is not usually taken into consideration. Of course if you can have all the other good qualities, of large size, beautiful fruit, hardy, healthy, productive and early bearing trees, you are that much better off, but you want quality first and last.

In this paper I shall not give any details regarding the planting, cultivation, or management of the orchard, but confine myself to a short discription of the most valuable varieties suitable for each class that have proved successful in my own orchard, and that are adapted to this part of the Province of Ontario.

There is one thing to be taken into consideration in selecting varieties for planting, and that is the variation in quality on different soils and situations. A variety may succeed on one farm and be a failure on the adjoining farm, and consequently it is not advisable to plant largely of any variety until you have tested them on your own soil or know them to succeed on adjoining land and under similar conditions. The only sure way is to test for yourself, but unfortunately it takes nearly a life time before one can fully decide what to plant.

In the following descriptions I have placed each class in their order of ripening:

MARKET VARIETIES.

Clapp's Favorite.—Tree, an upright, vigorous grower, becoming spreading when it commences to bear; shoots require shortening back when young, or branches will become too long to make a good top; hardy, but subject to blight; very productive. Fruit, large and uniform in size, and evenly distributed; obovate ovate pyriform, pale greenish yellow, with dull crimson cheek, becoming

a lively red as it ripens up. Flesh, exceedingly juicy, fine grained, with a very agreeable slightly acidulous flavor. Season, first of September. A very good market fruit, but must be picked as soon as full grown and before fully colored, or it will rot at the core.

Bartlett.—Tree, an upright, but not very vigorous grower; healthy, but not very hardy; succeeds best when top grafted on some hardy, strong growing stock; exceedingly productive, in fact is almost an annual bearer; requires heavy manuring. Fruit, large obtuse pyriform, clear pale yellow, occasionally a pale blush on the exposed side. Flesh, very juicy, fine grained, melting; sweet, with a rather peculiar musky, agreeable flavor, fine for both dessert and canning. Season, first to middle of September. One of the best pears for home market, and fine for export if picked early and properly handled.

Duchesse Precoce.—Tree, an upright grower, healthy, fairly hardy, exceedingly productive; commencing to bear very young, consequently the trees do not grow large, and will probably be short lived. Fruit, resembles Bartlett in size and color, but slightly longer in form. Flesh, juicy, melting, with a slightly acid flavor, not of the best quality for dessert, but very fine for preserving. Season, a week later than Bartlett. A comparatively new variety, originated in France. Although not very high in quality, yet on account of its fine appearance and enormous productiveness it makes a very profitable market fruit.

Boussock.—Tree, a vigorous, spreading grower, healthy and hardy; moderately productive, but not an early bearer. Fruit, large, roundish obovate, deep yellow and russet, with a warm red cheek. Flesh, juicy, melting, sweet, agreeable flavor. Season, end of September. A very showy fruit, but not quite productive enough to make a first-class market fruit.

Howell.—Tree, an upright grower, healthy, moderately hardy, productive and an early bearer. Fruit, large, obovate pyriform, pale yellow, occasionally shaded with red. Flesh, juicy, melting, pleasant, slightly acid flavor. Season, first of October. A very good market fruit.

Goo ale.—Tree, a vigorous, thrifty, upright grower, healthy, hardy and productive. Fruit, large, oblong obovate, greenish yellow, shaded with reddish brown. Flesh, juicy, melting, sweet agreeable flavor, a little gritty at the cores Season, middle of October. A very good and profitable market fruit.

Bosc.—Tree, a vigorous but irregular grower, moderately healthy and, I think, quite as hardy as the Bartlett; productive, fruit evenly distributed over the tree, generally only one fruit on each spur, in place of clusters, as is common with the pear, ensuring nearly all fine specimens even in size and form, and free from blemishes. Fruit, large, acute pyriform, dark yellow, mostly covered with cinnamon russet, with occasionally a light touch of red on the sunny side. Flesh, melting, buttery, with a rich, delicious, slightly perfumed flavor. Season, middle to end of October. A very beautiful fruit, fine in quality, one of the best for home market, and will probably be one of the best for the foreign market; should be top grafted on a strong, hardy stock.

Anjou.—Tree, fine vigorous, spreading grower, healthy and hardy, but not productive. Fruit, large, obtuse pyriform, greenish yellow, shaded with brownish red. Flesh, juicy, melting, with a pleasant vinous flavor. Season, November. Fine for both home and foreign market, but too unproductive to be profitable.

Keiffer.—Tree, a very vigorous upright grower, healthy and hardy; a very early bearer and exceedingly productive on account of its early bearing and great productiveness; will probably not be long lived. Fruit, medium size, ovate in form, golden yellow, with bright red cheek and russet dots. Flesh, half melting, juicy, a somewhat peculiar sweet but poor flavor; gritty at the core; too poor for dessert, but fine for preserving. Season, November and December. On account of its great productiveness and beauty, it may for a time prove to be a profitable market variety, but I am inclined to think that when its poor flavor

becomes better known it will not bring as good returns as it does at present. It has one bad fault: after coloring up and coming to maturity, the skin rapidly changes to a very dark and spotted color, giving the appearance of decay while still sound.

Winter Nelis.—Tree, a moderate but irregular grower, branches slender and straggling; healthy and hardy, productive; succeed best when top grafted on some other good growing stock. Fruit, small to medium, roundish abovate, yellowish green, nearly covered with russet patches and streaks. Flesh, fine grained, juicy, buttery and melting, with a rich, sweet, aromatic flavor. Season, December to January. When the soil is suitable and it can be grown to a fair size, it makes a good market variety, usually brings good prices and is about the only really good winter pear.

Amateur Varieties.

Doyenne D'Ete.—Tree, a moderately vigorous grower, upright, slender branches; hardy, but subject to blight; an early and abundant bearer. Fruit, small, roundish, obovate, yellow, shaded with a red streak on the sunny side. Flesh, juicy, melting, with a very pleasant, sweet flavor. Season, end of July. This little pear is well deserving a place on the amateur list, as it is the first to ripen, and although small and not of the highest flavor, yet being the first of the season to ripen, is usually much enjoyed.

Ott.—Tree, moderately vigorous; stout short-jointed branches; very productive. Fruit, small, roundish obovate; greenish-yellow, some russet, shaded with dull red. Flesh, juicy, melting, sweet, rich perfumed flavor. Season, August. A seedling from the Seckel, a very fine dessert fruit.

Clapp s Favorite—Described under market varieties.

Tyson.—Tree, a very vigorous growth, taking on a fine pyramidal form, very healthy and hardy, a very fine tree to top graft weak-growing varieties on; requires age before it commences to bear; moderately productive. Fruit, small to medium, ovate pyriform, deep yellow with crimson cheek. Flesh, juicy, melting, very sugary, slightly aromatic flavor, very good to best. Season, middle of September.

Bartlett.—Described under market varieties.

Seckel.—Tree, moderately vigorous, healthy and hardy, productive. Fruit, round obovate, dull brownish yellow with reddish brown cheek. Flesh, juicy, melting, buttery with a very rich spicy flavor. Season, October. The Seckel is generally considered to be the highest and richest flavored pear grown and is a standard of quality by which other varieties are very often measured. Originated near Philadelphia.

Sheldon.—Tree, a vigorous upright growth, hardy, somewhat subject to blight, requires age before commencing to bear, only moderately productive, should be gathered early as it is much inclined to blow off. Fruit, medium to large, obtuse obovate, greenish yellow, nearly covered with thin russet, brownish red cheek. Flesh, very juicy, melting, sweet rich vinous flavor, a little gritty near the core, very good to best. Season, October to November.

Bosc.—Described under market varieties.

Lawrence.—Tree, a moderately vigorous grower, forming a round spreading top, healthy, hardy and productive. Fruit, medium size, obtuse, pyriform, lemon yellow with occasional patches of russet. Flesh, juicy, melting, sweet, aromatic flavor, very good in quality. Season, December.

Dana's Hovey.—Tree, a vigorous upright grower, healthy, hardy and productive. Fruit, small, obtuse pyriform, greenish, yellow, netted and patched with russet. Flesh, juicy, melting with a very rich sweet aromatic flavor, best, nearly as good as the Seckel. Season, December.

Winter Nelis.—Described under market varieties.

Josephine de Malines.—Tree, a moderately vigorous spreading grower, productive. Fruit, medium in size, roundish oblate, pale greenish yellow, netted and patched with russet. Flesh, a delicate pinkish tint, juicy, melting, sweet with a delicate aromatic flavor, very good to best. Season, December to February. On young trees the fruit is occasionally poor and astringent, but becomes much improved as the trees advance in age and is then one of our best winter dessert pears.

Jaminette.—Tree, vigorous upright grower, healthy, hardy and productive. Fruit, medium to large, roundish obovate, clear green, becoming yellowish green at maturity, marked with russet patches. Flesh, juicy, buttery, sweet pleasant flavor, gritty at the core. Season, January to April. Although not of the best quality, it is a good variety to finish up the season with, by keeping in a cool cellar and bringing a few at a time into a warm room, they can easily be kept in use until April. I have not found late keeping winter pears very satisfactory. So far the Jaminette is the only one I have found desirable, as a late winter dessert fruit.

Mr. BOULTER: Pick out three of the best varieties of pears for general purposes—to bring in money?

Mr. BEMAN: I would take the Bartlett, the Duchess Precoce, and then Bosc.

Mr. BOULTER: You would throw the Flemish Beauty over entirely?

Mr. BEMAN: Entirely—too much inclined to spot. The Anjou is a very shy bearer; with me it is almost worthless.

The SECRETARY: You do not grow it on the dwarf, do you?

Mr. BEMAN: No, I was not very successful in growing dwarfs.

The SECRETARY: The Anjou is far more productive on the dwarf.

Mr. BEMAN: So I have understood, but I did not succeed very well with the dwarfs. I do not recommend any dwarfs for my locality. I have not seen any dwarfs that have succeeded so far.

TOP GRAFTING AND IRRIGATION.

By J. I. GRAHAM, VANDELEUR.

The subjects of top-grafting and irrigation was brought to my attention when I undertook to collect the fruit of our township for exhibition. In passing from orchard to orchard I was surprised to see the amount of poor, worthless fruit, and so many poor fall varieties I estimated there was over one-third that was worthless, and our local buyer told me that between a third and a half were fall varieties. When the buyer comes around he is told that he must buy these with the winter fruit, and that holds the price of the winter fruit down. I have been top-grafting for thirty years; I have a hundred varieties, and I am satisfied you can increase fertility by top-grafting; I refer more especially to the King. The Baldwin with us is considered tender, but where it is top-grafted it does not show the least sign of tenderness. For stocks, I find the common seedling is good, and I have found the Spy poor stock to top-graft; so also is the Baldwin and the Golden Russet. I have quite a number of varieties here, some grown on the original stock and some on top-grafts, which you may compare. But I have not noticed the differences referred to by Prof. Sears in the last *Horticulturist* in respect to the stock affecting the colour, keeping and taste of the apple. I have had success with the following grafts:—Hurlbut and Gideon on Ben Davis; Baldwin and King on seedling stocks; Hurlbut on seedling; Fallawater and Peck's Pleasant on Little Red; Cooper's Market on seedling stock

and on original stock; Spy on Crab stock and original stock; King on Ben Davis; Baxter on seedling; Yellow Bellflower on seedling; Hubbardston's Nonsuch on seedling and original stock; McMahon White on Fall Pippin; Baldwin on Rambo; Ribston Pippin on Little Red; Gravenstein on seedling. For scions, I am a strong believer in the individuality of certain trees I have noticed that in the Spy, the Pewaukee, and the Cayuga Red Streak. In a row of Spy trees there is one tree much earlier, much redder in color, and much earlier to bear. In the Pewaukees I noticed that one was of much higher color than the other; and I have noticed it in the Cayuga Red Streak so much that I asked one of the exhibitors to let me have one to send to Prof. Macoun to see if it was really that variety, and he replied that it was, but a remarkably good specimen of that variety. It is usually recommended to take scions from bearing trees. In taking off the top I would remove from one-third to one-half at a time. You must be careful not to expose the branches to the sun. I have quite a number, having a strip down the south side killed in that way. If you have not left sufficient foliage, you should use paper to cover the exposed portions. I would not cut a branch over two inches in diameter. If the trees are high I would use Ben Davis or Ontario—that is, if the apple suited me—to keep it lower. You have it much under your control by the variety you put upon it. Should you put Spy on a high tree, you are still running it up higher. If you require spreading, the Rhode Island Greening will spread. Should you come to a stock that is damaged, as I have done, and had doubts whether to graft it, I would graft it with an early-bearing variety. The Ben Davis will come into bearing the second year. In top-grafting, if you observe, you will learn a lesson on pruning that will be of use to you. It is a mistake, often made, to put in too many grafts. If a man is putting in for money, he will put in all he can, and if you have not knowledge you will sometimes put in too many yourselves. You should not have too many branches on a tree, but it is not good to cut off a large branch near the trunk. I need not speak of the waxing—you all know how it is done. In the summer I would re-wax them, or press it over again when the sun is warm. I would not have too many varieties; four to six I would consider quite sufficient for a commercial orchard. The varieties that suit me are: King, Spy, Baldwin, Rhode Island Greening, Ben Davis and Mann.

[IRRIGATION.]

The other subject is irrigation. My farm is on a mountain side. In that valley, and at the base of the rock just under the brow of the hill, there come out little streams. These I run together and lead them across the orchard, and use them for irrigating the orchard and fields and the garden; also for power in the barn. I simply have to put stones in the ditch and it overflows and goes right down between the rows of trees whenever I want to water. Every year there is a month or two during which I find it necessary to irrigate. The ground is clay soil, and it would crack quite large cracks if not irrigated.

The CHAIRMAN; Are there many seasons during which you irrigate there?

Mr. GRAHAM: I do it every season. There is usually a month during harvest season when it is dry. I irrigated the rows of trees, and I had a splendid crop of fruit. It is hard to say how much I should attribute to the water or the manure or the pruning, but I am well pleased with the returns. Some years ago someone asked Prof. Craig why it was the apples were rotting so badly that year, and his answer was that it was caused by the starting or stopping of vegetation—the checking of it by drouth and then starting of it by rains—and I noticed that year that my apples kept splendidly in the cellar. This year I was told up north that fruit would not probably keep well, Mine is keeping splendidly in the cellar.

The SECRETARY: Would you tell us any results of irrigation in the fruit itself—in its size or quality?

Mr. GRAHAM: Yes, even the Ben Davis. The water there is running the year round. At that end where the creek has been running all the year the apples were nearly a half larger than at the other end of the rows. The Spitzenbergs were loaded much heavier near the creek than they were last year.

Mr. BEALL: Do you cultivate your ground through the growing season?

Mr. GRAHAM: No, I keep hogs in it, and when the water is in it it softens it, and they do quite a bit of cultivation. The fruit business is an important one in our district. It is estimated that at Thornbury some $80,000 has been paid out during the season for fruit.

Mr. CASTON: There was one important point in Mr. Graham's paper, about the individuality of trees. I was very much interested in Prof. Sears' article. The question is, what effect it will have on the fruit by taking scions from a fruit that has a certain individuality about it, and also from a particular part of the tree? I sometimes have a tree that will bear heavily on one side and have no crop on the other. We often see that on the Northern Spy. The idea was to take our scions from the bearing side of the tree. We know how we can improve grain, vegetables, roots and that sort of thing by judicious selection. Could we not carry that out in fruit growing? I think there is a great idea there. It is said nurserymen take their scions indiscriminately. In top-grafting can we accomplish nothing in that line? I think that idea is probably new to the oldest fruit growers here—carrying out the individualities by top-grafting, as regards productiveness, color, early bearing and all other things that constitute a good fruit.

Mr. POWELL: I may say that that was the very thought I had in my mind to discuss here for you at perhaps this afternoon's session. I have been working a number of years on the same line as this gentleman, and I think it would be perhaps as important a line to discuss as could be taken up. (Hear, hear, and applause).

Prof. MACOUN: I would like to warn the fruit growers about top-grafting on Wealthy and Duchess. We have tried it, with the result that after several years those that had been top-grafted had outgrown the Wealthy and Duchess, and I expect we will lose the trees in a few years. There is a marked difference when you see the trunk very much smaller in proportion than the top. We are starting a series of experiments in top-grafting at the farm in Ottawa, and we are using the Haas, Mann and Crystal White as stocks, and I propose to use the MacIntosh Red as a stock; it is one of the cleanest trunks we have. I propose to graft them on seedlings of the Martha Crab, and then Rhode Island Greening on top of that, and I think we may be able to get some of the tender varieties to succeed with us.

Mr. MORRIS: I think the Professor will find if he buds the Crab it will shoulder.

The SECRETARY: Has Prof. Macoun tried the Keiffer pear as a stock for other pears? Many of us will be inclined to graft our Keiffer pears to some other variety.

Mr. POWELL: For several years I have been working on Keiffer stocks with the Anjou and the Bosc. I have not attempted other varieties, but have been very much satisfied with the working of these two varieties on the Keiffer. There seems to be a perfect union, and it is a question which is raised as to whether the union will be perfect between other varieties and the Keiffer; and I find that in that respect the union is perfect, and I cannot see why the trees will not last well on toward a century, The Anjou is one of our most valuable pears, but very uncertain in its productiveness. Many orchards will stand for twenty years and show no fruit, and yet you take the Anjou and top-work it, or

the Keiffer, and my experience is it becomes one of the most prolific bearers. I have had it now nine years, and every year it is necessary to go through and thin the fruit, it sets so heavily of that magnificent fruit. There are just one or two points necessary in top-working the Keiffer stock. One of my neighbors, a very successful fruit-grower, has met with absolute failure in all his efforts, and I think he has made a mistake in cutting off the entire top of his Keiffer stock at one time. It is a very vigorous grower, and there must be some provision for the flow of sap in the Keiffer stock, otherwise there is a danger of failure; but my plan was this: the Keiffers were set as two year old trees, and allowed to grow one year; then I inserted only two grafts the following season. The next year I would cut off another branch, and the third year would finish the top-working. That left some Keiffer all through the period of changing the tree. The result is that when I had finished the third year the Keiffer wood was all removed, and I had my Anjou stock well established, and good strong top also from the scions that were set. Now in this case there was no check at all given to the tree, and the union has been perfect, and you can't see to-day where the grafts were set. The Bosc I think is a little more difficult, because the Bosc is not so rampant a grower as the Anjou; but I have met with excellent success in top-working the Bosc also from the Keiffer, and have to-day fine trees that are bearing annual crops and of the very finest quality. Now as to the other varieties I have no experience, because I limit myself to very few varieties for market purposes. Our friend Mr. Willard whom you have had the pleasure of having before your Association, has been writing me in reference to the working of the Bartlett pear upon the Keiffer, and I cannot say whether the union will be as perfect with the Bartlett as with the other varieties or not; but if this principle is used in working the tree over gradually, not all at once, I see no reason why there might not be a good union with the Bartlett or the Seckel, or any other variety that might be worked. There is where the important point comes in: do not cut your stock away all at once; take time, and I think you will be entirely successful.

Mr. SMITH: Can that rule be applied to all?

Mr. POWELL: I think that will apply in all cases, but you will not meet with the failures with the Keiffer that you will with others.

Mr. SMITH: Is not the Anjou a coarse feeder?

Mr. POWELL: It is; it will require a great deal of fertilizer. It also requires about as much room as a Baldwin apple tree. They are naturally a very large-growing tree; the roots and the branches spread so that we ought to set Anjou pears at least 35 feet apart. With me the Anjou has proved a healthy, fine, vigorous grower, with good foliage also.

Mr. MORRIS I would like to say one word with regard to pruning pears. The pear tops should be kept cut off, not allowed to go up in air, for then the wind takes hold of them and blows them down, and when a tree leans to the north-east the sun will strike the stem of that tree and it is going to die. There are more trees killed by the sun getting at the trunk than there are by blight.

Mr. GEO. E. FISHER, Burlington: I find the Anjou does not bear. I have a lot of trees, and some of them are large enough to have had 30 barrels, and they did not bear scarcely anything. How would it be to graft those trees with Anjou?

Mr. POWELL: I think the Anjou would be very much benefited by top-working. In a case like yours where they do not show productiveness, the very fact of cutting off your trees, even after they have stood ten years, and even setting Anjou upon Anjou, I think the effect would be to give you fruit on those trees. The tendency of the Anjou is to make wood; it is a wonderful wood producer, and the vitality seems to go to wood. Now, the checking of that by top-working would give you fruit.

Mr. PATTISON: Would not the ceasing of cultivation have the same effect?

Mr. POWELL: I hardly think so, because I do not believe the cultivation is detrimental to the tree at all. I think it is necessary. High culture I think is very desirable; but we must in some way give check to this wood-bearing tendency. And I think think there is no way so effectual as top-grafting trees after they have stood for a few years. My experience is on the Keiffer stock, they have been exceedingly productive.

Mr. PATTISON: Have you had any experience with Sheldon?

Mr. POWELL: I have not grown the Sheldon, because it is so prone to drop its fruit. The winds, when they strike a crop of Sheldon, lay such a large proportion on the ground that I have not planted the Sheldon tree. Another point is, the Sheldon is not a popular fruit in the market. It is not appreciated, although I think it is one of the choicest and finest varieties of pears; but its color is against it, and its shape also is undesirable, and so I have avoided planting it.

Mr. SMITH: I think that is a question that ought to be taken up, to educate the people to the use of the different kinds of pears.

Mr. MCNEILL: Although we have no representatives to speak from the affiliated horticultural societies, we must not estimate their work by the amount of talk we have had from them. It is an exceedingly important work, and it has done more, perhaps, than any single advance that has been made by the management of the society for the extension of horticultural knowledge, and for fulfilling the objects of the Provincial Association. Their work has been a decided advantage to the Province; and wherever there is a Horticultural Society located its influence is felt to a very large degree, and the Province owes a debt of gratitude to the managers for so faithfully following out the lines of work laid out for them by Mr. Thomas Beall of Lindsay, who is so intimately associated with them, and to whom so great a share of the credit is due

The CHAIRMAN: The Secretary has some correspondence on the fraudulent packing of fruit which he will read.

The Secretary read letters from S. Nesbitt, Brighton, W. E. Wellington, London, England, bearing on the subject. He also called attention to two baskets of apples on the table—one basket taken from the centre of a barrel of apples that had been packed for export, and the other of apples with which it was faced at each end.

HOW CAN WE PREVENT TRICKERY IN THE PACKING OF APPLES FOR EXPORT?

BY A. H. PETTIT, GRIMSBY.

This is a subject that has been discussed by our fruit growers for the last twenty years, and we have as yet failed in agreeing on any definite steps that might be taken. Now, I don't think you can pass any legislation to make a man honest. You may correct some evils, you may improve the quality of our fruit by cultivation, by pruning, by spraying and by thinning, and thus get rid of a large proportion of this unsalable fruit that is being placed in the centre of barrels for the British market. We all know that the growers of this country have more or less inferior fruit. They are going to market that product, and they have a right to market that product, and I don't believe that any legislature or any government can pass a law to prohibit them doing so. But if we can raise public opinion to the point that it ought to be raised, then I take it we can reach the only feasible plan. For years I have advocated and urged that a system of inspection be adopted for apples. The point then asked was that the Government appoint an inspector to inspect such fruit as was offered for inspection. I do not believe that we can make a compulsory law that all fruit shall be inspected, but we can place it within the reach of a man who wishes to make a

contract for the British market, for example, to have the inspector see that the goods shall be up to the standard marked upon the barrel. If it is marked " No. 1 " that barrel shall contain No. 1 apples ; if it is " No. 2 " that it shall contain a certain grade of apples as set forth in that Act. Who is doing this fraudulent packing ? Is it the fruit grower of Ontario ? I do not believe it is. It is the speculators who buy very large quantities ; and when a man undertakes to cover such a large scope of territory and to handle such immense quantities of fruit, it is impossible for him to get men well enough posted to go about the country and put up those apples in the condition they ought to be put up Now, I do not think any buyer or shipper desires to have his apples put up badly, and if the Inspection Act was carried out, proper inspectors appointed at ports of shipment, and, if we could have local inspectors to inspect and brand those barrels before they leave this Province at all for the British market, then you would begin to work up the standard of Canadian fruit for market.

Now, I believe there is no country in the world that can produce better fruit than we can in the Province of Ontario, so when the growers do not pack their fruit properly it is a discredit to us all in the British market, and an injury to our business. I made a little estimate this morning, taking 300 barrels as an easy basis for figuring. Taking this year as an average price for Canadian fruit, the average in the British market will not exceed twelve shillings a barrel, which would be $900 realized on the 300 barrels. Counting the packing and shipping of the apples at 15 cents a barrel, and barrels themselves 27 cents, freight and commission $1.10 per barrel, a total expense of $236, the shipper will receive net $664 for his 300 barrels at 12 shillings a barrel. Now, let me take out 100 barrels, sorting them out more carefully, and put up 200 barrels at 15 shillings a barrel—that is a moderate estimate ; that will be $750. Deduct the same proportion of expense, $79, and this will leave the shipper $671, instead of $664 for 300 barrels, or a margin of profit that is as large by putting 200 barrels through in this condition as the 300. Now, he has 100 barrels or 300 bushels of good apples for the evaporator, apples that will bring him to-day in our market here from 25c. to 30c. per bushel. He can get that after he has taken out his seconds, all excepting the ciders ; but by putting this 100 barrels of seconds with his peelers, he will run the peelers up to 30 cents a bushel—we will put them at 25 cents a bushel, which will give him $75. He will then get $746 for his 200 first-class barrels and 100 peelers, instead of $664 on his 300 barrels. Now, besides all this, there is a great deal of waste of energy, a great deal of waste of labor and a great loss of credit. I believe if we look at this thing properly we will make more money by working along these lines than we will by shipping such stuff to the British market ; and I believe, more than that, that we can establish in our country a great market for evaporated fruits, and the more we can do to encourage this business and manage to dispose of the product in this country, the better for us. I was not prepared to deal with so important a subject to-day ; I have not come here with any prepared ideas on the matter, but I will submit this point : that I believe a system of inspection—a voluntary inspection for those who wish it—would be a step in the right direction to have carried out ; and I believe that thorough inspection at the port of shipment, where possible, and also in fruit-growing sections of the country during fruit season, will accomplish a good work and begin to establish in the British market Canadian-inspected apples as the best in the world. I get a great many catalogues of the sales of fruits of the United States, as well as the Canadian, and I fail to see that there is very much difference except in the barrel. I believe the American barrel is slightly smaller than ours, holding about a peck less, and the prices, as a rule, run about that peck less in value ; therefore, I believe there is very little difference in the standard of packing.

The CHAIRMAN : We would be glad to hear from Mr. Carpenter in reference

to these two baskets of apples. I do not think the farmers put up those apples, and I do not think the dealers are doing it blindly or without instructions.

Mr. CARPENTER: Before I left home, I suggested that it would be a very good idea to send a sample of these apples down here so that people could see what stuff was being packed; so I suppose they took the suggestion at home and sent them down.

I can't say those apples were packed for export, but one would suppose so, because they were labelled XXX, and with the best brand the man put up. They were sold to me for No. 1 apples, in fact XXX, as represented. I opened one barrel of Baldwins and it was supposed to be No. 2, and it was a fair No. 2 barrel of apples. I did not have any time at my disposal just then, but I thought the No. 1 would be quite satisfactory, as the No. 2 were fair. By a strange coincidence, there were five of these barrels left out of my shipment; they were taken down to my place and opened up, and they were five barrels of the vilest trash that ever was put in barrels. If they had simply been shovelled up they could not have got in worse trash. By a peculiar coincidence also, the man who was selling the apples made an error of $19 in my favor, and I thought he would write for it when he got home, but he didn't, and needless to say he will never get the $19. I have not any suggestion to make, for I have not studied or thought out what would be a good way to obviate this difficulty, but no doubt one way would be to put up fancy packages of apples.

Mr. CASTON: You say you did not buy those for export?

Mr. CARPENTER: No, I buy very few for export, a few car-loads perhaps, but I sold these in Ontario. The English market is so uncertain that where we can sell here for any reasonable profit I think it advisable.

The SECRETARY: I think it will be in order to read a resolution that was passed by a meeting of fruit growers in Grimsby on the 17th of June, looking to legislation in this matter, which resolution was forwarded to Ottawa and a favorable reply got from the Minister of Agriculture for the Dominion.

Resolved, That both the Dominion and the Provincial Legislatures be asked to consider the advisability of legislation to carry out the following regulations for the sale of apples and pears:

1. That all apples and pears packed for sale in closed packages shall have the minimum diameter of the fruit inside marked in plain figures on the top or face of the package, thus—2 inches, 2¼ inches, 2½ inches, etc, as the case may be, and if more than ten per cent. run below the size specified, the package shall be considered fraudulently packed.

2. That all such packages shall also be stamped with certain grade marks which shall be defined as follows:

(*a*) X A No. 1. Sound apples or pears of uniformly large size and high color for the variety named, of normal form, at least 90 per cent. free from worm holes, scabs or other defects.

(*b*) A No. 1. Sound apples or pears of nearly uniform size and good color for the variety named, of normal form, at least 90 per cent. free from worm holes, scabs or other defects.

(*c*) No 1. Sound apples or pears of fairly uniform size, at least 80 per cent. free from worm holes, scabs or other defects.

(*d*) No. 2. Apples or pears that are disqualified from being classed under any of the aforementioned grades, but which are useful for culinary purposes, and not less than two inches in diameter.

3. That all apples or pears packed in closed packages be subject to inspection by the Government Inspector, and if, on opening one-tenth of the number of the packages of any one lot, these be found fraudulently packed, then the nine-tenths remaining shall be so classed, and the shipper be liable to a fine not exceeding 50 cents a barrel for all packages of that grade in the same shipment.

4. That provision be made for inspection not only at the ocean ports, but also at the request of the shippers, at local points of shipment in case of car lots.

5. That for local inspection a reasonable scale of charges be made of the shipper requesting it, guaged according to the number of carloads to be inspected.

6. That in such latter case the inspector shall apply some distinctive inspection brand to show that the packages had been inspected and found honestly packed; but, if found fraudulent, the inspector shall have power to forbid the shipment until properly packed and graded.

7. That in all cases the name of the packer and of the shipper shall be plainly stamped on the top of each package.

A. W. FARWELL (Oshawa): This is a vital point in our apple business. The whole profit in the apple trade lies in these two questions—packing and transportation. I know that there are apples shipped from Oshawa Junction that are put up the same as these. It is not done by the growers, but by the dealers. I have exported apples more or less for the last twenty years. I shipped the first car of apples that was ever billed straight through from Oshawa to Glasgow twenty-three years ago. Up to five years ago there was no dishonest packing done in our neighborhood; it was a straightforward business. The competition has become so great among buyers and they have become so anxious to gobble up the whole section of country that they go and buy up whole orchards by the lump. Previous to this we only bought what was shipping apples. We took what suited us, and we put up a good straight No. 1 apple and the farmer did what he could with the balance. Now the shippers take them to the fruit houses. There are four fruit houses at Oshawa Junction holding from 4,000 to 23,000 or 24,000 barrels each. The apples are picked off the tree, good, bad and indifferent, just as they come. They take them to the fruit house and they are sorted there. You can go into those fruit houses to-day and find barrels marked with the man's own honest name. You will see barrels in those fruit houses marked some other name that is not his name. Those that bear the real name are good apples every time. Those that bear somebody else's name or some factory's name are like those in the basket, and far worse than that. That is not a bad sample, for a small apple, at all. (Laughter.) I have shipped barrels of small apples to London before now, marked "culls," and got 16s. 6d. a barrel for them. There is no harm in doing that if you will mark them truly. If you send a good barrel of good apples, marked good, with your own name on it, all right, and if you send a barrel of culls so marked it is all right. But I contend it is all wrong for me to send a barrel with W. A. McBride's name on it, or Peter Dobson's name on it; and here is where I claim legislation should come in. I claim our Government has the power, and has the right to exercise it—to say that I shall not put somebody else's name on a barrel of apples for export. I make a good many thousand barrels a year for packing apples in. The Government says, "You shall make a barrel 17 inches diameter at the head, 27 inches between heads, 19 inches diameter in the middle, and if you pack apples in anything else then you will be fined 25c. a barrel." Why cannot they say that you shall put your name on it and guarantee what is in it or else you will be fined 25c. or 50c. or $1 a barrel? I do not believe there is anything in moral suasion in this matter; you may talk till you are gray-headed without doing any good. When a man buys apples and mixes them up there is where the trouble comes in, and there is where the Government comes in and has to stop it, the same as they do the adulteration of milk and cheese. In those cases you have to stamp and sell it as it is; and when the Government tells the apple-packers they have to do the same we will have honest apples—and we never will before. (Applause).

The CHAIRMAN: That is just exactly the kind of information we want. There is something substantial in that; and I know there are men here who can give us a good deal more of just the same kind of evidence. I hope they will

feel perfectly free to do it. It is just what we want to approach the Government with.

Mr. CASTON: There is one thing I can hardly understand—the idea of packing those apples for export in that way, because in the Old Country the fruit is sold by brokers at auction, and they have a large basket; they take two barrels at haphazard and empty them out into that basket, and the lot is sold on sample. Now, if they happen to get hold of a couple of barrels like the sample before us, it will affect the whole shipment.

Mr. A. H. PETTIT: I quite agree with Mr. Farewell's idea in this matter; but how to reach them is the point at issue. I cannot agree that the shippers do this on purpose. It is because they can't control their packers. But the question I want to ask is this: A packer puts up his apples and he ships them with a through bill of lading to the British market; how are you going to interfere with his goods in this country? Can you step in and inspect his goods without his permission? He has a right to put those goods in the British market, and no person has a right to prevent him from doing it. How are you going to attack him? If you show me that you have a right to get at him, then I can see that legislation might be passed to check it.

Mr. FARWELL: I think we can get at him all right enough. Every shipment of apples is billed on a through bill of lading. There are three of those bills of lading attested to by the agent of the railways. He gives the shipper two. He retains one to be sent to the head office of the railway. Now, the Government can see that they make out four and send one bill of lading to the Department. Suppose the Government compels him to put his own name on every package of fruit he ships; they go through to Liverpool, and Shuttleworth & Co., or Woodall & Co., sell those apples to the retailer; they are opened up and they are found like this barrel. There is the man's name on the barrel. Word is sent back to Ottawa that such apples are a fraud. The Department has the bill of lading there to find the very town the apples were shipped from. There is where you want your inspector. I know it is utterly impossible to inspect from ten to fifteen or thirty thousand barrels of apples down there in Montreal, suppose you had the power. How are you going to do it? When I ship apples in the winter I calculate them to get there just as late as it is possible to get aboard a steamer, and everybody else does the same. I have been in Portland when there were 257 cars of apples on the tracks, had to stay there three days, had to get a fire in the car to keep them from freezing. It has got so now that winter is the time of shipment, and every shipper times the arrival of his apples just as soon as the ship is ready to take them, and they are rushed in there night and day. How is it possible to inspect them? You might as well try to fly. You must do with it as you do with cheese. Turn to the criminal code. Every man is bound by his trade-mark, and if any man puts up his goods contrary to his trade mark then you can indict him. You cannot hang a man for shipping poor fruit. If he is fool enough to do it, and does not get the price for them, he will not do it more than once or twice.

Mr. MCNEILL: There is another difficulty in the way. As a fruit-grower, I would not trust those fellows on the other side with my barrels of apples. If I am not there, or my agent, to see that the barrels are bad, I would not take their word for it. There is another side to this story. A barrel is a different thing from a keg of cheese. When this apple goes over there I want some guarantee that the barrel that they say is a bad barrel, is certainly so. They say it is bad. I cant prove that it is not. We will have to—

Mr. FARWELL: Have a Canadian inspector over there.

Mr. MCNEILL: Of course if there was any means by which we could be perfectly certain that that barrel had not been tampered with—because it is an easy matter to tamper with a barrel, so that you still leave any label intact that

we put on, and yet it not be our fruit—but if there is any means of showing that the fraudently packed barrel had remained intact and the packer's name on it, then I would be in favor of his being punished.

Mr. PATTISON: The only way I can see to get thoroughly at the matter is to have an inspector at each station where the apples are shipped, although it involves more expense than I think we can manage. Then it could be easily found who shipped the bad ones and who shipped the good ones. Failing that, I think we cannot thoroughly get at the matter. In the one instance we are at the mercy of the man on the other side of the Atlantic; and although I come from there myself, some of their mercies are not very tender. (Laughter,) Whereas in the other case we are more or less at the mercy of the dealer, and his mercies are not quite what they might be either.

The CHAIRMAN: I would like to ask Mr Carpenter if the dealer's name, or any other name, or any other mark was on this barrel of apples?

Mr. CARPENTER: The dealer's name was on the barrel of apples in this case. I think they buy orchard's by the lump, and they want to make as much of the apples as they can, and they put the farmer's name on in the case of poor apples and let the poor farmer take the brunt. They come from W. A. Newton or D. A. Spears, or some one else, and the consequence is he has to foot the bill; so by the Government taking it up it would be a matter of protecting the farmer rather than doing him an injustice.

The CHAIRMAN: You got them practically from the man who packed them?

Mr. CARPENTER: Yes, but the man who packed them told me he packed them according to instructions.

Mr. PATTISON: Did he offer any excuse for the condition they were in?

Mr. CARPENTER: None at all; none.

Mr. EDWARDS (Peterboro'): Is this Association ever going to be strong enough, or is the Government going to be strong enough, to have representatives in England at the different points where apples are received, so that we may have a representative of our interests and the interests of Canadian sellers there? For it seems to me that that is of importance; and because of the statement that has been made, that it is desirable there should be an inspection on the other side, and there should be means of bringing home what is found on the other side back to the seller. That seems to be very desirable if it can be done. The difficulty, of course, is always in procuring the evidence and connecting the evidence with the seller; and the only way in which it can be obtained, and the interests of Canadians can be protected in connection with this great industry, is that either this Association or an association formed of those who are shipping, or better still, our Government, should have representatives at each port, and that they should look after all matters of that sort, and have means of bringing home every case of fraudulent dealing with the goods that are sent. Then, and then alone, I think, we can reach the trouble.

A. H. PETTIT: I may say that that is what we have at the present time—a gentleman on that side who is looking into the question in the interests of the fruit-growers of this country. This is the second year he has been in that position in the British market.

Mr. EDWARDS: With what result?

Mr. PETTIT: Well, no report has been published that I have ever seen, but I know that he is there, sent by the Departments.

Mr. EDWARDS: We should have heard something of it.

Mr. PETTIT: I know he does not speak very favorably of many of the fruits arriving in that country.

Mr. FARWELL: I am particularly interested in this point. It seems to me our Government should compel every shipper to put his name and address on every package of fruit he shipped, and with an inspector in each of the principal

receiving points in Britain all complaints of dishonest packing should be referred to him and he report on it. It seems to me you would then have control of the whole business. If a man over there buys a barrel of apples with my name on it, and he complains that it is not packed according to the stamp that is on it, the inspector goes and inspects that barrel, and probably all the rest. He may have bought a hundred, or three or four hundred, or may be three or four thousand, and he inspects different ones to see if they are up to the standard that they are claimed to be, and if he finds that they are like this barrel, or not up to the standard, then he reports to his Government. They, having the bill of lading, can look after him in twenty-four hours.

Mr. EDWARDS: It would be very easy, it seems to me, to connect the actual packer with the trade-mark and avoid the danger of the packer putting on the farmer's name on a barrel, and so endeavoring to hold the farmer responsible where he simply sold and the packer did the fraudulent packing, by providing that every one who is shipping should have his name or his trade-mark, or whatever it may be, registered at Ottawa, so that no name could be put upon any package but one which was registered at Ottawa, whatever it might be. when the packer would have to put his own name, and if the farmer's name happened to be registered the farmer would look after it himself and see that what was going on under his name would be protected.

Mr. MCNEILL: I went into one of the largest packing houses of Ontario—I hope I am not open to any slander—and saw apples packed just exactly like this one, and being a visitor there, by courtesy I could not of course get on a righteous indignation as I would anywhere else, and so with my sweetest smile I insinuated that it was not the style of packing that I thought best calculated to hold the English market; and he said, "Oh, these are not our packing; these are all ordered." I said, "What do you mean by that?" "Why," he says, "so many barrels of this brand are sold to the English trade." He afterwards explained that the English buyer bought these apples to be packed in this particular way. On my part I would not do like that for anything; but it was a mere matter of business—they were ordered to be done in that particular way. May be he was slandering the English buyer, but he said it with an air of truth that staggered me, and I was half inclined to believe what he said.

Mr. FARWELL: It is a conceded point that illegal or dishonest packing is perpetrated every day. The only question is, How are we going to stop it? In regard to the fraud suggested by Mr. McNeill that might be perpetrated in England—and I am sorry to say there are scalawags there the same as in Canada—there might be some plan adopted the same as in handling coal oil from the United States. When we get a barrel of American coal oil here it is inspected, and we have to erase or spoil the inspection brand before the barrel leaves your premises, under penalty, and a very severe penalty. Surely the men whose business is to get up Acts, who are experts at it, could conceive some way to cover all these little loopholes, and it seems to me they ought. (Hear, hear).

Mr. CARPENTER: I think we are getting an inspection too far away from home, I think we want an inspection before they leave here. I do not think we want it on the other side at all; for this reason: All apples do not carry in the same condition It depends on where they are placed in the steamer, and how they are carried, and how many days they are going over, and so on. I think the inspection should be here so that we would know we were not getting defrauded.

Mr. CASTON: Is there not a system in the Old Country by which the retailer has twenty-four hours in which to return the stock back to the brokers?

The SECRETARY: There is such a regulation.

Mr. CASTON: I think Mr. Farewell struck one important point in regard to buying orchards in the lump. The dealer is anxious to handle all he can, and he

buys more than he can handle, and sometimes he cannot get hands enough. Some Bay of Quinte men were up in the Georgian Bay district, because they all made money last winter. They could not get enough men, and owing to the unseasonable weather after the drought the apples began to fall, and I believe fully half of the apples are windfalls, and they are stored away now for packing. How those apples will come out it will be for the future to reveal, but I think it will be a sad tale of woe this winter. In the old way of buying apples by the barrel I think there were far better apples put up. I do not see why the farmer should not sell the surplus apples to an evaporator as well as the dealers.

Mr. GRAHAM: In the Georgian Bay district the apples are nearly all bought by the packing houses. They mark on the barrel "store" on the winter apples. I saw them on a long table. They empty them out and re-pack them, and they have a paper with their name cut out, stamped on it, the full size of the end of the barrel; they put that inside the lid when they are selling, so if there is fraudulent packing done it must be in the houses.

Mr. PATTISON: Could we not get at a basis to frame some sort of Act to check this by appointing a committee of fruit growers to confer with a Parliamentary committee, so that between the two they could draw up something satisfactory. It is admitted on all hands that there is fraudulent packing, and that it is vital to the fruit trade of the country that this should be stopped.

Mr. PETTIT: I think we all admit there is a very great and growing evil in the country, this bad packing of fruit. This resolution (of June 17th) was passed by a meeting of fruit growers this last season, and I will move that this resolution be endorsed by this meeting.

Mr. MURRAY PETTIT: I beg to second this resolution. I helped to draft it, and I think that although a step in the right direction it is not half thorough enough.

Mr. MCNEILL: I quite agree with the spirit of the resolution, but one thing will have to be changed. It seems to me impossible to indicate the sizes in inches when we are talking of different varieties. What would be a splendid specimen of this apple (showing sample) at that size would not pass at all in that variety (showing another sample).

Mr. POWELL: In our country the American Apple Shipper's Association have substantially taken the same action that you are considering to-day; and to cover the point raised last they classify the apples that will cover the $2\frac{1}{2}$ inches diameter, which shall be of the grade of Fameuse, McIntosh Red, and that class which are recognized as only medium apples in size, while with the larger apples they are classified as the Greenings and the Baldwins and the Kings, and the larger grade is recognized by the variety. That is very easily reached in that way. (Hear, hear).

Mr. FARWELL: I do not think that you can grade the Baldwin along with the King. Some years the Baldwins are small size, yet they are perfect, clear from scab and worms, but still a little under size. Other years they will be a little large. You will get a 3 inch King almost anywhere, while a 3 inch Baldwin is a very large one. I think it would be better to allow the dealers to put in their apples according to their own inclination, and grade them themselves, and put their name on them, and put it on the outside. I cannot conceive what good the name of a dealer is on the inside of a barrel. No one but the person that uses them see it. But it wants to be on the outside, and the grade of the apple, whatever he calls it, on the outside also. Again, you take the Golden Russet, and you will find many a barrel of fine apples that are very small, that will run down to $2\frac{1}{4}$ or $2\frac{1}{2}$ inches, and then you will find some other orchards that will run up to 3 inches. The inferior ones are good apples, though not worth as much as the large ones, if they are good apples, if I mark them what they are, and the dealer over there buys them according to my guarantee. I would make the shipper

guarantee everything just as he markets it. There is no difficulty in getting at it, though ; the only difficulty is to get the contents of the barrel guaranteed the same as marked.

The SECRETARY : I do not think this question of grades is nearly as difficult as it seems it might be. In Grimsby we have been exporting in fancy packages to Britain the past season, and using the identical grades mentioned in this resolution, and the apples less than 2¼ inch diameter have been marked "small" or the word "dessert" might be used, and then apples larger than A1 have been called Extra A1. That covers an apple like the large Kings. So by using such definitions the whole matter is disposed of. I think that will adjust itself very easily, and it is a great help in making sales I made a special sale of fifty barrels of Spys this summer to a buyer in Liverpool, just by defining the lowest size that would be in the barrel. They were to be above 2½ inches in diameter, and this was the most satisfactory thing I could say to him in making the bargain ; and I believe it is going to facilitate the direct sale of apples to consumers or to individual buyers, or retailers in the old country, more than anything we can possibly do, because we can define the sizes that we intend to put in our different shipments, and that is one of the very things they are anxious to know.

The resolution was then put and carried unanimously.

THE PRODUCTION OF HIGH-GRADE FRUIT.

By G. E. POWELL, GHENT, N. Y.

It gives me very great pleasure to meet with you, and I have enjoyed exceedingly the discussion which has been so active, which has just closed. In the short time which I may engage your attention I should like to speak of the importance of producing more high-grade fruit. One of the solution of this very problem which you have been discussing is to eliminate as far as possible inferior grades. My first suggestion would be that no fruit grower attempt more orcharding than he can handle well. (Hear, hear). I think if there is a mistake, perhaps on the part of all of us, it is that all of us, it is that we are too anxious to extend our acreage, when the aim should be to produce more and finer quality. Now, this calls at once for the discussion as to how we can reach more high-grade fruit in our cultivation of orchards. We should start at the foundation of this question. I believe we should recognize the fact that we must deal with the soil itself as one of the first requisites of successful fruit culture. We are all of us now attempting to carry on a line of business which requires a high degree of knowledge and skill. Our soil has all been devoted for many years first to the production of cereals. After the growing of cereals for many years we have taken from the soil the cream of its plant food, that which is so essential to the production of the finest fruits. We recognize the fact that when we come to virgin soil, there we grow fruits in great perfection ; that upon virgin soil we have less of difficulties to contend with, simply because that soil contains the fullest abundance of plant food to give the most perfect condition of growth of tree and also development of fruit. Another point which occurs to me is this ; that in the very rapid destruction of our orchards we have changed somewhat the best conditions for general fruit culture. I know it is true in my own State that since our forest preserves have been so denuded, that during the past quarter of century we have been visited with great extremes. It is the rule for us to have extremes of temperature, very low ruling temperature suddenly, frequently coming upon us during the winter, and extremely high temperature ruling at certain times during the summer with very frequent and prolonged droughts. The result

is that our fruit trees to-day are subject to very severe changes, and the vitality of trees become impaired, and when that is the case it is with great difficulty that we can produce such a high-grade fruit as we should like to. Now, for the short time that is given us this afternoon I want to speak of the importance of the right.

Propagation of Fruit Trees.

I believe we have got to study the question of constitutional vigor in trees, and for a number of years I have been working upon this line, testing the value of selection of trees according to constitutional vigor. With us in New York State the King—which I might say, perhaps, is the king of all varieties, representing such very fine high flavor, representing such beautiful color, and representing (for at least a large portion of the trade) such desirable size — the King stands out prominently as one of our highest-prized fruits, and yet over a very large section of New York State it is by no means a safe apple to plant. It will not last to exceed fifteen years. At the very time when the tree should be coming to its greatest usefulness it begins to decline and fail, and at the end of twenty years King orchards have virtually passed out of existance. We recognize the fact that the King is constitutionally defective, and hence it cannot be recommended for general cultivation. At the present time I am extensively planting the King, but not upon its own body or upon its own root, but rather employing the principle which was somewhat discussed this morning, of top-working. I shall be very glad to give you as briefly as possible some outline of this method. I believe the principle of top-working is one of which we have not fully appreciated the value. I believe through the principle of top-working it is possible for us to largely reduce the time in which orchards may be brought into bearing. I believe that even with the Spy, by suitable top-working, we can reduce the bearing age of a Spy orchard a number of years. (Hear hear.) In the pruning of different trees, I discovered the fact that in pruning Rhode Island Greening, or in pruning the King or the Baldwin, that it was comparatively easy work. Half a day, or an entire full day, could be put in pruning without any very fatiguing labor, but when the Spy rows of trees were reached I invariably found in my own personal experience in pruning that I was pretty well tired out even before noon hour—that it was a vastly different thing pruning Northern Spy trees than pruning Rhode Island Greenings or Kings — for the reason that the wood of the Spy is so much more solid; it is so much harder in its texture that it is vastly more laborious to do pruning in the Spys than in many other varieties. This led me to the examination, then, of the woods of different varieties of apples, and the further study of the value of this stock to top-work other varieties upon; and about eight years ago I started in with the propagation of the King apple upon the Northern Spy stock.

I chose the Northern Spy from the discovery of its being an exceedingly hard textured wood, and hence also being a vigorous, thrifty tree in its growth—a most desirable stock on which to top-work other varieties. Now, in studying upon this question I want to emphasize the remark that was made here this morning in the belief in the individuality of trees. It is undoubtedly true that trees have their individuality, and hence in this principle of propagation we must study the traits and the characteristics of trees' growth, and we must study the individuality of trees, and not select promiscuously even from the bearing trees from which we are to propagate. There is individual force in the fact that the propagation of trees in the nursery from immature trees has the tendency to prolong the growth of trees certainly in the orchard. I think it is not materially different in the propagation of trees from the breeding of animals. All who are in the line of stock breeding understand that there is no wisdom in breeding from the young or immature animal; that the best results are obtained from breeding

along more mature lines of stock. This truth I think will hold equally well in the propagation of trees. If we are multiplying continually year after year from the young, immature stock in the nursery we are inducing in the propagation the continued growth of wood, as that is the function of the young tree of the nursery, first to develop and produce its wood; and if we propagate from that source we are simply pushing that development of the wood growth to a longer period than we would if we selected our propagating stock from the more mature tree. Now upon this point let me say that in the selection of this propagating stock it is important to take a number of things into account. First we should study the tree as I have said from the standard of its individuality. We will understand as we go into a block of trees that there are those that require little pruning. They seem to be from nature well-balanced trees. They seem to grow in all directions naturally and well; and we will strike many trees like this in our work which require comparatively little pruning. They seem to grow out as well balanced in all directions, and their growth seems to be such that they naturally grow into a fine and perfect tree, eliminating very much of the labor of pruning; while on the other hand we still see trees that are inclined to fill up with massive growth of wood, and it is necessary to go in and prune severely in order to throw that tree out into the shape we would like to see it acquire. Now, in the selecting of propagating stock I would make a very careful study of this principle. And so in starting this orchard of Kings upon the Spy, it was my privilege to send to Tompkins County in New York State where the King grows to the greatest perfection. It is recognized that in Tompkins County, surrounded by lakes, the King does its best, and so pains were taken to send to this county to take the propagating stock from this section, and then from only what I describe as typical trees. I stated to the gentleman who got me the scions. "Now, study the tree in every respect closely and carefully. Study the tree in its form, and only select scions from the trees that are growing naturally in a perfect form." Secondly, the request was to study the character of the fruit. We all know that there are differences in trees in relation to the character of the fruit which those trees will produce. Some will produce uniformly good fruit, while again the tree next to it will produce a larger proportion of inferior fruit. There is where the individuality of the tree manifests itself again. I cannot explain it, but there undoutedly is a difference in trees in assimilating the nutrition which is obtained from the food and the soil; and perhaps the greater power of assimilation of nutrition may make the difference between a tree that will produce a larger proportion of excellent fruit, as against one that will perhaps produce a larger proportion of its fruit inferior in quality. So the quality of the fruit and the character of the fruit was studied along with the natural form of the tree, and in this manner these scions were selected. The were placed in trees that were set out eight years ago two years of age, and at the second year the progagation began. Now as to the results. It has been a very interesting study all along to note the development of those trees. All along on this first system of propagation there were distinct differences in the forms of those trees. Some came into form beautifully. You could select here and there, all through this plot, trees that from the time the scions were set until the present time have been developing naturally very fine trees. In addition to that the same characteristic seems to have followed in the perfection of the fruit. The fruit is uniform in size. When you have picked Kings from these trees you will find that as they lie in a pile it is a very uniform lot of apples in regard to size. Evenness of sizes is marked in the production of some of those trees. Then again, the uniformly fine color which comes out upon them. So that the tree seems in this first experiment to be working out, proving that there is individuality in trees, and it is for us now as fruit growers to study and learn these, and then make use of them as far as we can. Now, then, to carry it further. In the planting of a

second block the selection would be made still from the finest of those that have first been started; and I find that out of a lot of 100 trees that the selections came from less than half a dozen—the perfect type is found within half a dozen. And so by the selection from those fine types the chances are in another block to increase this per cent. or larger number of typically fine trees; and I certainly have faith in this principle of propagating trees. (Hear, hear). I believe if we study it sufficiently and understand it sufficiently that it is possible for us to eliminate in our culture a large proportion of the inferior fruit which is now produced upon our orchards. I am quite well convinced in my own mind that we do shorten the period of bearing—the number of years. At the end of eight years it is now possible to take from these trees well toward two barrels of fruit During this past year, in propagating on this same tree from later winter sweets, at the end of six years there were trees that bore a full barrel of apples. At the end of three years propagating with the Sutton Beauty—another apple which is receiving a good deal of attention in New York State—at the end of three years I was able to take from these top-worked trees this year two bushels of apples from the tree; showing that the tendency of early development by the selection of buds from mature trees must have some force in it. We know that top-working will shorten the period in any event; but if we choose buds from trees that show in the first instance a strong tendency to early bearing I think we can bring down the period of bearing a number of years, and that is an essential point in this propagation, in addition to the other points that I have raised—to note the tendency for early productiveness, early bearing, and where we note that tendency to select our buds from those trees. I want to show you some wood taken from these trees, which I have brought with me. I hold in my hand some wood taken from the trees at the end of three years that produced two bushels of apples, showing a very fine development of fruit buds upon this wood at the same time that this fruit was borne during this past season. Now, in addition to the producing of two bushels of apples from this tree, although we have had a very prolonged drouth this past season—I think the worst drouth I have ever experienced in my business, no rainfall to wet the ground for six months to any depth whatever—you will see that there is a fair growth of wood upon these trees right through the severe drouth. The fruit was developed in the very highest perfection, and at the same time there is a very remarkable development of fruit buds for the coming year. So that it gives me strong faith in the principle of the judicious selection of stock to propagate our trees from. While upon this subject, tillage comes in, of course, as a very important part of this whole question. I believe we should push the question of development as rapidly as it is possible of all our trees. By the vigorous development of trees I think we put them in a position to resist diseases, to more effectually resist the insect attacks. If a tree from any cause is standing still that tree is certain to be afflicted with all sorts of troubles, diseases and insects; and hence if we can bring to our orchard management a high degree of culture, putting our trees in the most thrifty growing condition, we shall solve in this manner to quite a large extent some of the difficult problems of the infliction of diseases upon our trees. So I am a believer in very high culture; and here is an evidence of the rapid development that may be brought to trees in the bearing tendency. I hold in my hand peach wood from trees that have not been set yet two years—set a year ago this last spring—that are to-day fully developed with a strong set of fruit buds, and I can only attribute it to the special culture which has been given these trees during the two summers that they have been growing. You who are peach growers will recognize that there is a very full set of buds upon trees that have been standing in the ground but a little over one year and a half. Now, these trees were struck the year that they were set, in 1897, by peach curl to an extent that the foliage was

nearly sacrificed for a short time, but they rallied quickly from it. We commenced our spraying just as soon as we discovered that the trouble was coming, although that was too late to be the most effective; but we sprayed at once on the first indication of the appearance of this peach curl, and the result was we brought out a very fine foliage very soon indeed, and the check really was not so severe as it promised even that first year. The growth has been kept up continuously since, and the result this year is an exceedingly fine development of fruit buds, as you will see upon that wood, as the result of overcoming a bad start and catching up of the loss that was made from the visitation of peach curl during that first year. To show fruit in two years is a remarkably quick development of the peach, and it only shows the possibilities that lie within our means of bringing orchards into early bearing. I want to speak now in connection with this principle of propagation, and the mode of giving attention to our soil. Along with the top-working, and along with judicious pruning, we must see that our trees have the most perfect nutrition. I was interested in the dicussion this morning touching the development of fruit buds. It is a difficult question to explain. The scientific man finds difficulty in explaining just the whole process of the development of fruit buds, but it seems to me, from the closest observation which I can bring into my own business, not as a scientific man but as a cultivator, a fruit grower, that it is largely a question of nutrition. If your trees are properly supplied with plant food that is easily and readily available, it seems to me that is where the question lies largely. If there is the most perfect nutrition of the tree it will go on and develop those fruit buds either earlier or later in the season, but they will be developed strongly and thoroughly in proportion as is the most perfect nutrition of the tree. Now then, if we recognize that fact, then comes the important question, how can we bring to our trees the most perfect nutrition? I believe we have never yet fully understood the real philosophy of tillage. I believe the principle object of tillage is to get at the nutrition in the soil for our trees. I understand tillage to put the soil in the finest possible condition for our trees to utilize the plant food that is there most abundantly in all our soil. So in connection with this subject of the early development of bearing orchards, I followed a system of tillage which I will give to you as briefly as possible, and it may perhaps explain this very wonderful development of the peach buds upon this wood. As I said a few moments since, we are trying to grow fruit upon soil that has grown wheat and corn and hay and potatoes for many years. We have lost all of the older cultivated soil. We have lost one of its very essential elements to a large degree, and that is the humus of the soil. When the soil has lost largely of its humus it then feels drouth severely. It is thus that trees cannot receive the best nutrition, because it is through the principle of humus that the best action in the soil is carried on—the liberation of plant food, the retention of moisture, of water, to be carried through periods of long-continued drouths; and so for the past number of years I have been working along this line of re-incorporating in the soil a liberal amount of humus, and in my own particular case have been working with the crimson clover, now for eight years—first cultivating from the very earliest opening of the spring, bringing to that soil the most frequent culture that time would admit of giving, because in the earlier part of the season we must get the best development we can in the growth of our trees. Our fruit is made in the early part of the season; that is, it is given its best condition by the early tillage which we bring to the soil. We put our soil into the best possible condition through the very earliest tillage that we can bring to it, and then the most frequent tillage from that time up until the wood has been well grown, which will be in New York state somewhere about the middle of July. The frequent and constant tillage makes it possible for the plant food that is in the soil to be most readily liberated, so that the plants, the trees, the vegetation, whatever we are cultivating, can get that

food in the most available condition. When we have cultivated in this manner, when we have reduced that soil to its finest condition which I have indicated, which is so congenial to the roots of trees and plants, we naturally then must protect that soil from the loss which will follow in the after months. And so high tillage—the very thorough tillage which I am advocating now for orchard culture—will be destructive to that orchard unless we provide for the loss which certainly will follow unless we cover that soil during the next months when growth ceases for some plants. And so I believe in the winter covering of every acre of land that is brought under this system of high tillage; because you can see that when we have gone over a piece of land continuously week after week by this finest possible culture, we have exposed that soil for the balance of the season to rains and storms that will be most destructive of the plant food which we have so abundantly liberated through the process of tillage. So you should always follow this system of tillage by covering that soil with some growing, living plant for the following autumn or winter. I have been very successful indeed with the use of crimson clover; and I say crimson clover for this reason. It being an annual plant, it furnishes an opportunity, in the climatic conditions which surround me, to push this system of tillage for the finest development of our trees and our fruits earlier in the season; and then they have a plant that from its nature, being an annual that will grow rapidly, is especially adapted to sow upon the soil after the tillage ceases, and it covers that soil with a heavy, thick matted cover which protects it from the down-pouring and beating rains, and holds the nitrates which have been liberated by this high tillage. and so protects that soil from the serious loss which would ensue if it were left in a naked condition. Now the question which will arise in your minds is, can the crimson clover be grown by you as it can be grown by me? That is a matter for you to determine by experiment. Undoubtedly you have experimented with it here; but there are other plants that can be used. Among the pea family there are plants which can be used where perhaps crimson clover would not make a cover that you would like, and so you are not confined simply to the clover plant, but you can choose from others that will grow and make a cover for the winter. There is little to be said about peas; they are of course stricken down by the first hard frost, and you do not get quite so valuable a cover with peas as you do with ordinary clover.

Mr. CASTON: Do you mean the ordinary peas, or cow peas?

Mr. POWELL: The cow peas. But, with the thin roots that come from the pea plant, it helps to hold the soil together better, and I would rather have the peas if I could not grow the clover. If the soil is not covered with snow—and I apprehend that you have much more cover of snow here than we have in New York State, particularly in central and southern New York, where it is seldom that we have our land covered of late years with snow—I would rather incorporate with the peas, if the clover does not meet with your wants here, a little sowing of rye or wheat or grain. Any plant that will go through and keep its life during the winter will help to hold your soil in finer condition if you cannot carry the clover through the winter. So I would say, as a suggestion, to accompany your peas with a sprinkling of the rye, that you may have living roots, a living plant upon your soil all through the time of the winter months; and in that case you can get all the benefits which I have been speaking of here in the culture of the clover. Now, the clover culture, or any culture in this direction of the leguminous plants, it is surprising how they will restore the soil in plant food. I have met with some very great surprises in the use of crimson clover, and I am very glad to give you some positive figures in the matter.

Crimson Clover as a Green Manure.

Analysis of Soils.

	Three crops clover.	No clover.
Water	15.00 per cent.	8.75 per cent.
Nitrogen	.21 "	.12 "
Humus	2.94 "	1.91 "
Phosphoric acid available	.015 "	.008 "

Difference in favor of soil covered with clover.

Water	6.25 per cent. equals	46.875 tons
Nitrogen	.09 " "	1,350 pounds
Phosphoric acid	.007 " "	105 "

The soil was alike. There were only a few rods separating the places from which these samples were taken, and hence all conditions were similar. The chemist found in the clover treated plot 15 per cent. of water, after he had gone through the processes of drying that soil out as much as possible, as against 8.75 where no clover had been incorporated whatever. Now, these samples were taken at the end of a six weeks' very severe drought; we had no rainfall for six weeks. The ground was absolutely dry, or it seemed so, and yet there was the difference that was found at the end of that period of six continuous weeks of drought—47 tons of water more per acre on the clover-treated soil than on the other. That has explained one thing in my own culture, that I have been enabled to carry through large crops of fruit with apparently no loss for the want of water. The tillage, in the first place, as I have explained to you, has helped to conserve the moisture with it in the sub-soil. That was a help all through the early part of this dry period. That constant tillage just held down and kept down the water supply that naturally passes up by evaporation and so lost. That was held down and passed through the roots of the trees, and the result was that large crops of pears and apples have been carried through these droughty seasons without any apparent loss or damage except a little diminution in the size of the fruit. So that the difference in the water contents is very marked indeed, you see, between these two samples of soil. I want to speak of the humus next, because it is so closely connected with this water question. The chemist found in the humus portion of his work 2.94 per cent., as against 1.91 in the other soil. There is the explanation of this whole question of the water supply in the soil. You see, the largely added amount of humus made it possible for that acre of land to carry out and to hold and to distribute for a longer period that amount of water. It was by filling up the soil with all these millions of conducting roots which this plant gives to it, thereby re-incorporating the lost humus material, that it was enabled to hold and distribute and carry out that larger amount of water to the acre; so that the humus is very closely connected with this question of the water supply in the soil, on the very principle that you will readily understand, that a sponge will take up, and take up, and take up water continually, and then it is a long time before it gives it all off. On the same principle the humus acts on the soil as sponges can in retaining water. Now, the next important figures in this experiment relate to the nitrogen. While these trees have been carrying large crops of fruit the trees have also been making a liberal growth of wood. These two things do not go together always. You will find that the heavier the growth of your fruits upon your trees, the less growth there will be of wood, and especially if a large crop is produced in a droughty season, you get scarcely any growth whatever of new wood. Many of you will recall that there would not be an inch of growth upon a pear tree grown in a dry season that was producing a large crop of fruit—absolutely no new wood made; yet in this pear orchard, where this growth has been going on, they have grown crops and at the same time made from 1½ to 2 feet of wood. So the soil has been well supplied with nitrogen, which is a very essential element in producing wood upon our

trees. Now, what proportion of nitrogen has been brought to the soil? A chemist was with me from Cornell University, and in listening to the discussion of the growth of wood and the production of wood through droughty seasons at our farmers' institutes he said to me once "Do you know what you have been doing with this clover business?" I said "No, only in a general way there has been vigor and growth of tree, and there has been productiveness of fruit, but I can say only in a general way, not being a chemist." Then he proposed to analyze all these soils himself, as a chemist only can determine accurately just the operations that are carried on by the growers and fertilizers, and so on, in the soil; and when he reached the nitrogen results they were astonishing. He found .21 in the clover-treated soil, as against .12 in the non clover soil, and the difference of .9 per cent. of nitrogen in an acre of soil 13 inches deep is 1,350 pounds. Now, to have purchased that nitrogen and put it on an acre of soil during three years, at the low valuation of 15 cents a pound, would have cost me $202.50; and yet that amount of nitrogen was added to the soil, with possibly a little liberated by the process of tillage, but largely this amount was added by the clover plant itself, showing how economically and how rapidly we can build up the lost plant food in our soil by the incorporation of a plant like the clover plant. And the peas, of course, will do the same as the crimson clover has done. That, it seems to me, is one of the most inspiriting lessons I have ever learned in my orchard management—that it is possible for us to go on and continue to grow fruits, and at the same time improve our soil. Now, that is a very important statement to be able to make. The general processes of production are destructive. Here is a practice which we can pursue of high tillage, and when we have finished our high tillage we can incorporate in our soil a plant that shall at the end of the year, the same year that it has produced its crops, leave that soil even better than it was before. That is a very great statement to be able to make, and a truth very important for us to realize. So that we have not yet learned the value, in our orchard culture, of incorporating a clover crop at the latter part of the season, after all cultivation and all production has passed by. Now, one other point in regard to this chart, and that is the phosphoric acid. The chemist found .015 per cent. in the clover-treated soil, as against .008 in the other. The difference in the three years made 105 pounds more available phosphoric acid which he found in the soil. I asked him to explain how it was. By the incorporation of the larger amount of humus, the larger amount of humic acid which is produced in the soil set free more largely the phosphoric acid that was available for the use of the plant. He has not worked out yet the potash results, but he indicated to me that they would be undoubtedly as striking as the phosphoric acid, showing that before we expend the money to any large extent for an artificial fertilizer it will be wisdom for us to utilize that which is in the soil to-day abundantly. Your soil is not impoverished here. You have a magnificent soil, particularly here in Ontario, and I have no question of doubt will be productive for hundreds of generations yet to come. (Hear, hear.) It is only a question, while all these processes of production are being carried on, of re-incorporating through these plants that have the special power to build up in the soil its most important elements, humus and nitrogen, and you have production here for unlimited ages to come; and generation after generation can go on, and your soil will be better a hnndred years from to-day than it is now. That is the possibility. I think when we can so handle our land that each generation shall find it better than the preceding one, that we have reached certainly a very valuable line of work and discovery in the culture of our land. (Applause.)

Mr. A. H. PETTIT: You make no account of spring growth of the clover plant. You plowed it from time to time in the spring?

Mr. POWELL: Yes. With me, I prefer to get that growth in the autumn. A great many say, "Suppose it winter kills, isn't there a loss?" No; you have

made your gain in all the growth that you got from July or the first of August up to the winter. The plant has done its work; the nitrogen is in the soil; the humus is there, and if it winter kills, although I would rather have the living plant, it is not materially a loss. Now, suppose the plant goes through and comes out in the spring alive. I prefer not to have any spring growth, for this reason: We have all experienced this past year a very serious drouth. It is what is the matter with all our apple business to-day; the longer period of dry weather, followed by an exceedingly warm autumn, has brought the apple business into a condition of national calamity; that is just what it is to-day. In the spring we want to avert all the loss of moisture that we can. If our clover begins to grow in our orchards during the spring, the plants are just pumping up the water that is now being stored during these winter rains and storms; and so I prefer to put the plow in and plow it down, even if it is alive, on the very first day that it can be done in the spring. Stop the growth; stop the pumping up of this water through the growth of the plant, and put it under through tillage at the earliest possible moment; and then, after we have got the growth of our trees re-incorporated, plant again the latter part of the season.

Mr. TWEEDLE: Do you find the take of clover the second and third year easier than the first?

Mr. POWELL: Decidedly. When I first sowed, although I had great faith, I sowed something like ten acres as an experiment. The next year the growth was very much better. The third year it was decidedly better, and now I have no failure at all with it, even during this past season of drouth. I have 70 acres covered to-day with the clover that has just simply gone on and made a good covering against all this very dry season which we have had—not as strong as usual, but good.

Mr. PATTISON: Would there not be a great difficulty on many soils, especially in a dry time, in getting the clover to start at all at that date? It seems to me the main difficulty of that system is that there are many soils in our neighborhood where it would be impossible to get clover to take then, except in a very exceptional season.

Mr. POWELL: I would answer that in this way: If you keep your soil under the thorough tillage which I have already outlined, you have retained sufficient moisture in your sub-soil, unless the drouth is extremely prolonged and severe, so that you will really get a very fair start of that plan even in a dry time. Of course, if you could get just one shower to start off the plant, it would strike its roots down into that moist soil, and then you would be certain of a good stand. The danger would be along in July—if you would sow as early as that—of a dry condition of soil that would fail to germinate your seed.

A MEMBER: What do you do immediately after the sowing?

Mr. POWELL: When you finish your last cultivation sow the seed, then run it over with the cultivator and cover the seed very little. That keeps it down, and if there is any moisture, the roots will strike right down.

Mr. MCNEILL: There is another reason for plowing that early, before there is any spring growth. About corn-planting time I had an enormous growth of crop just coming out in bloom. That was plowed down, and it formed a perfect mat and broke up the communication between the sub water and the top of the soil, although I had the top soil in excellent culture; the corn that was sown remained there for weeks, just as if it was in the crib, until the rains came. Had that fine soil been in communication with the sub-soil water by a comparatively firm soil, the corn would have grown immediately—there would have been sufficient water thrown up from the sub-soil, in which there was plenty of water, to have germinated the corn.

Mr. TWEEDLE, of Winona: What soil is yours, Mr. Powell?

Mr. POWELL: It is what would be called a gravel loam; it is not a sandy

loam—just between a sandy loam and a shale. It is not a shale, but it is a gravel loam inclined to a sandstone sub-soil.

Mr. TWEEDLE: How would that compare with a clay soil?

Mr. POWELL: The clay soil would be the heavier, and I think the crimson clover is not so congenial to the clay soils as to our heavier loams; and if you have clay it is a question whether the peas would not be better than clover.

Mr. CASTON: How do the cow peas compare with the clover as a nitrogen crop?

Mr. POWELL: They are very good. I like the crimson clover because of the large amount of humus it puts back in the soil. Your peas do not give you quite as large an amount, but as a nitrogen gatherer it is equally as good.

Mr. PATTISON: How would some heavy straw-growing varieties of the ordinary field peas do? They attract a great deal of nitrogen.

Mr. POWELL: I should think where you could grow them they would very suitable indeed for your heavier soils.

A MEMBER: Would you recommend such tillage for all kinds of fruit trees?

Mr. POWELL: Yes, I think I would make no exception whatever, even to the peach, which is more susceptible to tillage than almost any other tree. I would recommend the same tillage for the peach although in a peach orchard I would withhold somewhat the clover; although I want to say right here that I have had the crimson clover for six continuous years in the peach orchard, and that peach orchard to-day is in the very finest condition of health of any trees that I know. In the peach districts of Delaware and Maryland they would not dare to sow crimson clover as I am sowing it in New York state, but I am experimenting with this orchard to see how far the crimson clover culture can be carried, and although last year the buds were frozen mostly, still the growth of wood was excellent and no trees were frozen where for six years the crimson clover had been plowed in around those peach trees.

Prof. MACOUN: I would like to describe our system of tillage at the Experimental Farm. It is a little peculiar on account of the character of the soil. I think we are getting very good results from that system. The soil is a very light sandy loam, in fact it might almost be called barren in parts, and my purpose is to try and get as much humus as I can in as short a time as possible, because I think it is very important to have it there, and we are adopting a little different system from what is generally advocated. Supposing you have a cover crop of clover in the winter—and I may say we use common red clover with great success—we plow that under in the spring and re-seed immediately with clover. That clover is allowed to grow through the season, and it is cut at intervals. It is cut all the next season—that is, it is cut for two summers. The second season I have had in four weeks of that clover 25 tons of green clover lying in the orchard from four cuttings. The clover reached a height of 18 to 20 inches before each cutting. I cut it just before it came into bloom, and the result is that we have a moist and decayed vegetable matter lying on the surface of the soil; we have a gradually-accumulating mass of humus just below the surface of the soil, and I have found the orchard not to suffer in the least degree from the lack of moisture. I would not advocate this system on any other kind of soil than we have there. Although the soil is very sandy it seems to contain a quantity of moisture, and I think that we are really warming the soil by this clover treatment. Of course the second winter the clover dies, but we plow it under in the spring and re-seed it.

The CHAIRMAN: You do not take the clover off the soil; you just cut it and leave it on the ground?

Prof. MACOUN: Just cut it and leave it on the ground.

J. D. SERVOS: Suppose the soil of an orchard is in excellent state of cultivation, would you recommend sowing the orchard to Hungarian grass and at the same time seeding it with lucerne and afterwards cutting the Hungarian and pasturing it with pigs for a number of years?

Mr. POWELL: I should hesitate to put in a crop like Hungarian grass in an orchard that is thriving, growing and producing good crops of fruit. I think there would be danger, although the very fact that your orchard is thrifty is the evidence that it is now in excellent condition. I would not interfere with that by putting in any crop like Hungarian grass. I think that you might find the danger of checking the thrifty, excellent condition, especially if you should be followed by severe, dry weather with that crop of Hungarian grass; I think you would give your orchard perhaps a very serious check, and I would not like to risk a thing like that.

MR. SERVOS: What do you say about lucerne, and pasturing the orchard with pigs afterwards?

Mr. POWELL: That would be making the same draft on your soil that the Hungarian would.

Mr. SERVOS: The reason for using the Hungarian grass is to make a proper catch for the lucerne. I found this year that in sowing in that way I did have a full catch of the lucerne, while heretofore it seems to have been not a success. I have just come to this county this year, and I tried that for the first time in my experience, but I have made a good catch with lucerne, and the pigs are enjoying it just at the present time. It is growing now, even in this climate.

Mr. MCNEILL: I am afraid you will find the pigs will ruin your lucerne; they will take the crown right out of it.

Mr. SERVOS: Did you treat the pears with the same treatment of clover culture?

Mr. POWELL: Yes, the pears were grown under that same system. Apples, peaches, plums, cherries, in fact everything that is cultivated is put under this system. Potatoes and corn, and even the garden is all kept under this system of clover treatment.

Mr. PATTISON: Do you not find that there is any tendency to produce blight in certain varieties of pears, cultivating at all?

Mr. POWELL: No, they have been entirely free from that.

Mr. SERVOS; After getting your land in that state of cultivation would you advocate growing a root crop?

Mr. POWELL: In a young orchard first planted, if you will feed each crop that is taken off, it is admissible to put in small fruits such as strawberries or raspberries or currants, which is my practice, growing those small fruits in all those newly-planted orchards, but each crop is fed independently while it is growing The same can be done with corn and potatoes, provided that each crop you put in you feed independently of the trees. That keeps up your culture, and you get some production from the soil; but it would be ruinous to attempt to crop a young orchard unless you fed each crop that is taken off it.

Mr. PETTIT: In reference to the crimson clover, you said down farther south it would not be wise with peaches—in Delaware. Why?

Mr. POWELL: For the reason that they think there is too much incorporation of nitrogen in the soil; that it makes too much growth of wood and danger of winter-killing their trees and their fruit-buds. That is the reason they do not dare to sow continually in Maryland and Delaware. Too much nitrogen induces too succulent a growth of wood, it being a warmer climate. I presume they get a larger elimination of nitrogen than we get in this colder climate: I presume they do not like nitrogen so much as they do phosphoric acid and potash in those states of Maryland and Delaware.

Mr. HUGGARD: Have you found any effectual remedy against pear blight,

and has manure and cultivation a tendency to increase pear blight or otherwise?

Mr. POWELL: I have never suffered from pear blight from cultivation or high manuring. I want to state to you frankly this afternoon that my pear orchard stands to-day absolutely ruined, but it is from an insect, not from high culture or high feeding. The last good crop of pears I had was ten years ago, which was 1,200 barrels. Prior to that crop the soil was heavily top-dressed with stable manure fed from steer feeding, the ration composed of wheat, bran, cornmeal and linseed meal, the manure drawn directly from the stable to this pear orchard and spread heavily upon the surface. In addition to that, a half ton of fertilizer per acre was used in the spring. That is applied early and plowed in lightly and the ground harrowed. That season this crop of fruit was produced which would barrel over 90 per cent. of No. 1 fruit. The trees were in the most thrifty condition. There was not the first evidence of any blight anywhere in the orchard. The following season there came the blight over the orchard, and it was very generally charged that I had over-manured and over-cultivated that orchard. But it was not pear blight. It was the first visitation of the pear Psylla, and I hope if you have not got it you will never get it in this beautiful country. It is the most disastrous thing that ever struck my business.

The CHAIRMAN: We have it.

Mr. POWELL: I am very sorry to hear it. Out of 2,000 trees I have lost 700 to-day, in spite of all I could do to keep down the ravages; 700 beautiful trees to-day are dead and gone, and will have to be cleared from the soil. Now, that has been a visitation of this insect, but there has been no evidence of blight whatever owing to this high culture. No evidence of blight has made its appearance in my orchards; so that I have proved in my own experience that with my soil, with my conditions, with high tillage and high manuring, it has not produced pear blight for a moment. I am thoroughly convinced of that.

DELEGATE: What insect is that?

Mr. POWELL: The pear Psylla is so minute that you cannot discover it with the naked eye at first. It works at the axils of your leaves and at the stems of the fruit, sucking out the sap, exuding from their bodies the substance known as honey-dew, which gradually settles down over the branches of your trees, after which a fungus attacks your trees, turns them black, stops the growth of the tree, stops the development of fruit, and ruins it. And it is the most persistent thing I have ever had to meet in my business, and I am at the point to-day of clearing my entire ground of pear orchards; I have almost reached that point.

The CHAIRMAN: Has the kerosene emulsion not been sufficient?

Mr. POWELL: It is very difficult to reach it. I have sprayed on the first appearance, persistently sprayed, and we cannot get it down. I have been advised by our entomologist not to give up, but I think ten years is a pretty long fight. I confess I am getting discouraged. This past ten or twelve days I have undertaken to give it winter treatment. I went out with my kerosene barrel into the orchard on pleasant sunny days when the Psylla are out. They are little flies now, and you will see them crawling up and down the bodies and branches of the trees. I undertook to control this pest by the advice of the entomologist of Cornell University, with winter treatment. We sprayed with five per cent. kerosene and it had no effect on them. Then we used ten per cent. kerosene and no effect followed. We used 15 per cent., and the Psylla would crawl right out unharmed. We added 20 per cent. and I think killed a few; and when we put it 25 per cent. we killed all we hit. The next day we sprayed one entire orchard, and there just as many live ones on as there were the day before.

Mr. SERVOS: Returning to the crimson clover, are we to understand that treatment is annual?

Mr. POWELL: Annual treatment. That is why I like the crimson for me, because being an annual it grows very rapidly after it germinates, so I get a

handsome cover for the soil during the winter months. The red clover being a biennial, we cannot get so good a crop of cover as we do with the crimson.

The CHAIRMAN: Does the crimson go right through winter?

Mr. POWELL? Yes.

Mr. TWEEDLE: Sown in July?

Mr. POWELL: Yes, sown about the middle of July.

Mr. BOULTER: What is your object in sowing so late?

Mr. POWELL: We want to keep up the cultivation of our orchard till as late as possible.

Mr. BOULTER: Do you sow anything but the clover?

Mr. POWELL: No, not with me. If it be necessary to have a nourish plant with it I would put oats or rye by all means.

Mr. MCNEILL: That would be too early for crops. If we quit cultivating any crops in July they haven't the quality.

Mr. POWELL: You would have to cultivate crops up till middle of August. This year I sowed even to the middle of September, and have a very good crop to-day.

Mr. MCNEILL: It is a splendid crop to put in after strawberries.

Mr. POWELL: Yes, very fine.

Mr. GEO. E. FISHER: In regard to the pear tree Psylla, in response to an invitation last year I visited the large orchards of Mr. Latch's, at Youngstown, in New York State. He took me to a very large block of dwarf Duchess pears that he said he had expected to lose from an attack of the pear tree Psylla. The trees were dropping with honey-dew. The foliage was sticky all over, and the fruit was covered with the honey-dew. The trees themselves had become blackened with the fungus which always develops where this honey-dew is abundant, and he had given up this orchard expecting to lose it. He said it was a very profitable orchard, and he felt it was a great loss not to be able to retain it. However, he said he had heard of the advantages of lime, and in February, 1897, he gave his orchard a thorough spraying with lime. He had no formula. He used all the lime that his nozzle would draw. He put all the lime on the trees that he could make stick. He applied it only once, and he cleaned his orchard entirely. When I saw this orchard in May it was bristling with fruit buds. The trees were the very picture of health. There was nothing about the trees at that time—of course there was no foliage—to indicate weakness or disease in any form. Now I would like to ask what time you plow this crimson clover down? How much a growth you obtain at the time it is plowed in, and when you sow? And then do you expect to gather nitrogen by it?

Mr. POWELL: In 1898 I had a growth of fourteen inches of crimson clover on the 1st of December, sown the 20th July among corn bushes; and in this pear orchard and in apple orchards the clover measured a height of fourteen inches. That which was sown later, in August, made a growth of from six to eight inches. Now, this is plowed in in the spring just as soon as the soil gets dry enough to go upon it and work it; and I will say here that you can plow your land that is covered with crimson clover at least one week earlier than you can naked land. It puts the season ahead for working at least one whole week, and I look upon that as a very important thing, because we must count and base our calculations more and more upon seasons of drouth. I do not know why, but it is becoming the rule of late years to run into severe drouthy periods, and I think as fruit growers we need to recognize that fact and prepare for it, and plan for it. Just as quickly as we can stir our orchard soil in the spring, by so much are we going to avert the damages from drouth, because we hold back the subsoil and water just as quick as we can stir that ground and can begin to work over its surface. One week will lose for us hundreds of tons of water in the spring by not stirring the ground. Evaporation begins and goes on so rapidly that it is of the utmost

importance that we get into our orchards early in the spring and plow and conserve its moisture. So I plow one week earlier by having this cover on the ground than I could without it. In regard to rye that will only add humus. It will add no nitrogen whatever to any soil. It has no power whatever to do that.

Mr. McNeill: Except indirectly; it will certainly make the nitrogen which would be in the soil more available.

Mr. Powell: It will from the fact of its making humus in the soil, but in itself it is not fitted to add nitrogen.

Mr. Servos: How deeply do you plow your clover?

Mr. Powell: Only about six inches.

Mr. Pettit: One difficulty may arise with our soils here in regard to that treatment. Our heavier lands, with a mass of clover and deep fall of snow, might suffer severely from mice on the unthrifty growing trees.

Mr. McNeill: Yes, there would be certain seasons where they would suffer from mice. For three or four years we have a regular migration of mice.

Mr. Whitney: I do not understand plowing six inches deep during the tillage. Suppose I make up my mind to try your plan in a pear orchard that has been left in grass, it will not do for me to plow six inches deep.

Mr. Powell: No. If you are going to take up an orchard that has been in grass for years you ought only to cut and tear that sward to pieces, because your roots are clean to the surface. They have to get their most available plant food near the surface. Now simply cut and break your sward, then put on your tooth harrows and tear it all to pieces; but it would not be at all safe to put your plow right over and plow to that depth. The more you cultivate the orchard the more you send the roots down.

Mr. Caston: Prof. Craig, formerly of Ottawa, now of Iowa, exhibited a chart at this Association giving results of clover at Ottawa. He showed that crimson clover was a better nitrogen trap than any crop he had tried, including the ordinary red clover and the Lucerne. He showed the crimson clover had a greater proportion of nitrogen, but unfortunately for a large tract of this Province, it will not live over winter; it dies quite early in the winter, even under the most favorable conditions. I would like to ask about these cow peas. I see by the bulletins that we get from the other side that they are highly thought of. How much do you sow to the acre, and about what do they cost?

Mr. Powell: I tried my first experiment with cow peas this year. I wanted to know the comparative value of cow peas with crimson clover, because I met in so many places the question that you raise here—that the crimson clover is not adapted to your locality so well. I sowed the cow peas at the rate of one bushel to the acre broadcast, and harrowed them in. They cost me, I think, $1.90 a bushel. They made a very fine growth, although the season was a very dry one. They grew to the height of about 20 inches this year. The first frost cut them down, and they make a fairly good covering, although not equal to the crimson clover as covering for the winter.

A Member: I would like the speaker to tell us why our Flemish Beauty pears blight and scab so much here, while most of our pears in Ontario go on well. Not one year in ten can we get any Flemish Beauty.

Mr. Powell: The Flemish Beauty is particularly subject to the attack of the pear scab fungus. There is a difference in varieties. The Baldwin apple and the Fameuse are the same—more subject to the apple scab fungus than some other varieties. So it lies in the variety itself. It is not able to resist the attacks, and hence it goes down under that attack.

Mr. Servos: There is no remedy that you know of?

Mr. Powell: The only remedy I know of is Bordeaux Mixture, and in many sections it does control it very largely. In some sections it does not. But Bordeaux mixture applied very thoroughly and persistently early in the season,

before the buds open at all, and followed up, will in many instances very thoroughly control that scab upon the Flemish Beauty pear. I have seen beautiful specimens grown by four or five sprayings of Bordeaux mixture upon the Flemish Beauty tree. The Baldwin is quite subject to scab. The foliage of the Baldwin is very defective with us in New York State.

Mr. SERVOS: The Baldwin grows better with us than it does with you.

Mr. POWELL: Yes, it does.

Mr. PETTIT: Have you any trouble with the Bitter Rot on the fruit itself?

Mr. POWELL: The Bitter Rot is extending quite seriously in New York State. It is a fungus trouble that takes the fruit early in the season. The fungus spore strikes the fruit and it develops just under the skin, and you have what is known as the Bitter Rot, which ruins the fruit for market or for use; and I think it is owing to the general decline of the Baldwin apple, and I think that general decline comes from the fact that its foliage is weak, that it is not a strong resisting foliage, and I think the Baldwin apple is failing because its foliage is tenderer and not highly resistant to fungus attack. For that reason I am planting to-day the Sutton Beauty apple, which is similar to the Baldwin in appearance, but the foliage of which is like that of an oak tree; it stands right up against the apple scab fungus, and I think we can grow Sutton Beauty in as prolific quantity as we used to grow the Baldwin apple.

Mr. MCNEILL: Mr. Morris could probably give us some very good information as to how the Sutton Beauty suits our local conditions here.

Mr. MORRIS: I would say that it does well with us, and while we have grown the trees a good many years I have been surprised there has not been a larger demand for it. I look upon it as every way a first-class apple. The quality is better than the Baldwin; in fact, the quality is first class. I would like to speak on the apple that I brought here as a long keeper. I have noticed in this apple a tendency to stick on the tree late in the fall. This year I let it remain on the tree to see how long it would remain. About a week ago I had them gathered. At that time about half the crop was on the tree and the other half on the ground, but all sound, while everything else in the sample orchard, all kinds, perhaps nearly three or four hundred varieties that fruited, had rotted or disappeared one way or the other—even the American Pippin, that will keep with us from January to June. This is an apple that was sent to us by the late Charles Dalby, and it is called the Horn.

G. Y. SMITH: Is it not too small for shipping?

Mr. MORRIS: It will keep until next spring.

Mr. SERVOS: Is that a fair sample as to the size?

Mr. MORRIS: It will grow larger. The trees require pretty strong soil. We have no trees for sale, and we would not grow them for a dollar a tree.

DELEGATE: They are too small.

Mr. MORRIS: I intend to graft a number of trees with them any way.

Mr. FARWELL: You want to get a force pump inside and force them out. (Laughter.)

Mr. MCNEILL: They are large enough for a dessert apple.

Mr. MORRIS: I am afraid we are missing the most important points in the address we have had—that is, the individuality of trees and the importance of top-grafting. I believe every word the speaker has said as to the top-grafting of trees, and particularly the King on the Northern Spy. There are good reasons to be given why that is a good tree to top-graft on with the King. He did not mention it, although he is well posted on it. First of all, the wood is entirely different. The Northern Spy wood is hard and fine grained; the King wood is coarse grain, and does not make the union as complete; I mean it does not unite so but what there will always be a certain amount of check to the flow of sap there. That is really what makes it bear. Then there is another thing: the roots of th

Northern Spy grow downwards, while the King roots are few and they spread out and run near the surface. There is a great deal of value in getting the roots thoroughly established downwards first. The great point about top-grafting is this: where that graft is put in on the top it checks the flow of sap, and will throw that tree into productiveness.

Mr. McNeill: Put a wire tight around it.

Mr. Morris: I was going to speak about that. That is where you can get your individuality—by doing anything that will check the flow of sap. If it is unproductive you can wind a little wire around it. The next year it will bind the bark on that. The next year you will have a good crop of fruit.

Mr. Smith: Kill the tree.

Mr. Morris: No, it will not; that wire will cut into the bark and it will grow right over it.

Mr. Boulter: Where would you put that wire?

Mr. Morris: Anywhere. It is well known that grape growers to go through the process of ringing their vines for show fruit. Most of you know something about that. In the Toronto Exhibition there is fruit that has been ringed. The fruit is larger, and will ripen perhaps eight or ten days earlier, but has not got the flavor. The process of ringing is just taking and ringing the bark right out of the branch of the grapes. Now, this individuality may come in this way; there may be some defect about the stem of the tree. Even a little bark at the bottom that you would not notice will check the flow of sap and throw that tree into productiveness. I cannot come to think that, taking a lot of trees together, one will have sense enough to be productive and grow a particular shape, and others not, unless there is some cause for it. I believe that plants and trees do almost have sense. Anybody that is amongst them all the time and studies them can notice their pecularities, and cannot help coming to the conclusion that they do know something. (Laughter.) You take a climbing vine that will start, and it will feel around for something to climb on, and perhaps it will get hold of something and climb up quite a distance; but that thing, whatever it is, may not be congenial to it, and it will unwind itself from that again and feel for something else and go up that. Or you may take a tree of any kind, and if there is a pile of fertilizer some distance from it the roots will go in the direction of the fertilizer. Take a willow and plant it on a dry piece of ground. Of course we all know willows like moisture. If there is a water pond or well or cistern or anything that way, the root will start for that moisture, and it will get there. Now, when we know and understand all this, we cannot help but think that plants do know something; but still I do not think plants will know so much as to assume certain shapes unless there is some cause for it.

Mr. McNeill: I think my friend, Mr. Morris, agrees strictly with the lecturer on that, after all, because you will be perfectly willing to admit that those fine horses that you feed so nicely there would breed a better class of horses next time, because they were fed so well this time, and therefore you would rather breed from them than from the scrubs your neighbor has.

Mr. Morris: Certainly I agree with him in what he says about feeding and cultivation.

THE PROFITS OF AN APPLE ORCHARD PROPERLY SPRAYED.

By E. B. Edwards, Q.C., Peterboro.

I am not a farmer and I am not a fruit grower in the same sense that many of you are here. I am not an exporter of fruit in the sense that many of you are here, and I don't pretend to know half of what a great many of you know. I can only give a little bit of my own experience in spraying in the hope that it may be of some use, and in the hope that it will not go any further if it is not. Some eight or ten years ago the late Mr. Dempsey visited Peterboro, in connection with one of the farmers' institute meetings, and I got my first light on spraying. The course that the Government have taken in enlightening the people in this Province upon the facts of spraying in a practical way have been of the greatest use, and they have solved the problem of helping the people in their development to an extent that they perhaps do not receive full credit for—(Hear, hear). I think they should receive full credit for it, and their efforts should be backed up by those here who know the benefit of spraying, in order that those who do not know it so well get the benefit of it and that it may spread through our country. (Hear, hear). I think we may deduce as a general proposition this result: that an orchard properly sprayed will have its value increased at least fifty per cent. over another orchard that is not sprayed. That is an average in all seasons and all through, probably in many cases—I found it so in my own case—the average will be much greater. The value has been doubled, I am satisfied, in many cases in the small orchard I have had charge of; and I believe that one is quite safe in putting it that the average increase in value would be at least fifty per cent. If you apply that to what is going on in this country, the development that is taken place in the productiveness as far as our orchards are concerned is something that is not perhaps tabulated to the full extent that our other crops are tabulated. The value of the orchard to Ontario is something that we have not yet, I think, quite figured up, and the value that is possible to be obtained in Ontario from the extension of the growth of orchards and the best production from the orchards in this country is something that we cannot measure. We are only at the beginning of it, and it is for the people and the Government of the country to see that everything is done to help the upward tendency in that direction, and to see that when people are setting out and going into orchard growing they are doing it on right lines. This Association is doing its work splendidly, and the help that is being given by the Government, through the desire that the Government seems to have in helping on this good work, I think is much to be commended. A few years ago I had the first information given to me by the late Mr. Dempsey on spraying. It came to me as a sort of revelation. I had taken hold of an orchard that my father had planted years ago, and that had been a very good one in its way, of some five acres, and I found when I took hold of it that the apples were small, especially in the Fameuse, and very scabby, and in very many other varieties, nearly all of them, they were worn-eaten. It was almost impossible to get a perfect apple out, and in attempting to ship away a few barrels I found it required three or four barrels to be turned out on the table to get one barrel that was decent at all. That seem to me very unsatisfactory, and it was after this I got the information from Mr. Dempsey and began spraying. I found the increase in the quantity of good apples to be so great that it surprised me beyond my expectations; and I found after a little that I could venture on the shipment of apples to the Old Country, and was very agreeably surprised that, instead of having to turn out three or four barrels for one barrel, I could get out for about half. I thought that was very well. I went on spraying, and I found I got a large percentage; and I think in my own experience it has doubled the productiveness of the

orchard in good fruit. Take for instance a year ago. In 1898, when other orchards in the neighorhood had not good crops, I found I had a first-rate crop of apples. On a single variety of some 22 trees I had some 66 barrels, which turned out about 50 barrels of first-class apples and netted me in Peterboro about $3 a barrel. I thought that was very good, when the culls out of them netted from $2.25 to $2.50. It was rather an exceptional year and rather an exceptional circumstance, to get a good crop where other people had a poor crop, and get them clean and good. But whether the crop is large or small the result is the same in proportion —that you get so much larger a proportion of good fruit that it is an easy thing to see that you attain the result of increasing your crop at least 50 per cent.; and if you apply that to all the orchards of the country the gain on the average through the country is something that is almost impossible to figure up. I look upon it, therefore, that although I cannot give you much experience here, nor say much about it, I have responded to the call made upon me to say from my point of view—coming from the back country district where there is not much fruit grown, and where experience of others, as well as myself, has been limited—that I am fully convinced that the spraying is the greatest thing that can be done by orchard growers of the country to increase the quantity and the productiveness and the value of their orchards.

The CHAIRMAN: One item was passed over this morning, the introduction of representatives of other horticultural societies.

Mr. W. C. REID, President Belleville Horticultural Society, said: I would just say that in Belleville our society is in very good condition, and everything is going along favorably. I came here for information rather than to give any and we are in harmony with the Fruit Growers' Association. We have a membership of between 60 and 70, and have decided to continue as a branch of the Fruit Growers' Association of Ontario.

REPORT OF THE COMMITTEE ON NEW AND SEEDLING FRUITS.

BY PROF. H. L. HUTT, O.A.C., GUELPH.

It is usually in seasons when the fruit crop is abundant that the greatest number of new fruits is brought to light. During the past season the fruit crop has not as a rule been a heavy one, nor have many new fruits been brought to the notice of your committee. In fact fewer samples of seedling fruits have been received this year than for several years past. Among these few, however, there are one or two especially worthy of mention, which will in time, no doubt, take a place on the list of standard varieties.

In the table below we give a brief notice of what has been sent in. Those deserving of special mention are marked with a star, and are described more fully in the paragraph descriptions which follow.

SENDER.	REMARKS.
Seedling Apples.	
J. D. Marsh, Mille Roches, Ont.	Something like a highly colored Greening med. size; fair quality, but not superior to Rhode Island Greening.
Jas. W. Grady, Annan, Ont.	An apple very similar to, if not identical with, Yellow Bellflower.
*J. P. Williams, Bloomfield, Ont	A handsome winter apple, said to be a seedling of the Belmont; promising.
J. P. Cockburn, Gravenhurst, Ont.	"Minto"; a hardy Muskoka seedling; med. size; green and dull red; fair quality; but hardly worthy of propagation.
Wm. Mowbray, Sarnia, Ont.	Med. size, yellow splashed with light and dark red; quality fair; but flesh too coarse grained to make it valuable.

Sender.	Remarks.
Seedling Pears.	
R L. Huggard, Whitby, Ont.....	Large ; obtuse pyriform ; yellow with red cheek ; flesh tender and juicy, with some granules ; quality good ; season Nov.
*Miss Lillian A. Trotter, Owen Sound, Ont..	Seedling raised by the late Mr. Trotter. Below med. size ; yellow with pink tinge on sunny side ; flesh buttery, and of good quality ; promising.
Seedling Plums.	
*E. D. Smith, Winona, Ont.....	The "Emerald" ; handsome ; greenish yellow ; like a small Washington ; quality excellent ; very early, ripening about Aug. 1st.
*F. R. Latchford, Ottawa, Ont	Like Englebert ; med. size ; blue ; fair quality ; said to be very hardy and productive.
Seedling Peaches.	
*E. D. Smith, Winona, Ont.....	The "Millionaire" peach; large and handsome ; resembling Early Crawford ; yellow flesh ; freestone; excellent quality ; season of Late Crawford.
R. T. Smith, Hamilton, Ont.....	Samples of this peach were also received and reported on last year. Fruit large ; white fleshed ; red cheek ; good quality ; season Aug. 15th to 25th.
Seedling Grape.	
*John Charlton & Sons, Rochester, N.Y.....	The "Charlton"; a cross between Mills and Brighton ; bunch and berry large; color light red turning to moroon ; quality excellent; promising.

Seedling Apple. Received in May from J. P. Williams, of Bloomfield, Prince Edward Co., Ont. Said to be a seedling of the Belmont, or Waxen apple. Mr. Williams says the tree is hardy and very prolific ; begins bearing at an early age. The fruit is of good size and handsome appearance, having a bright red cheek which should help it to sell in an old country market.

Seedling Pear. From Miss Lillian Trotter, Owen Sound, Ont., grown from seed by the late Richard Trotter. Tree said to be healthy and a rapid grower. Fruited for the first time in 1898 ; a fair crop this year. Fruit below medium size, obovate, obtuse pyriform ; skin yellow, with bright pink tinge on the sunny side ; numerous small brown dots ; stock medium length, stout ; cavity rather broad, very shallow ; basin narrow, shallow ; calyx open ; flesh yellowish, moderately juicy, buttery, sweet, high flavor. Quality very good. Promising.

The "Emerald" Plum. Received from E. D. Smith, Winona, Ont., Aug. 1st. The accompanying engraving, and the following description of this promising plum appeared in the September number of the *Horticulturist.*

"So long ago as the year 1889, the late Warren Holton, of Hamilton, well known in fruit-growing circles, sent us a sample of a new seedling plum, which he called "Early Green." In an accompanying note he said, 'considering its size, fair quality, and in particular its early season (1st August) in ripening, I think it may prove worthy of cultivation.' About August 1st, 1899, ten years later, we received another sample of this plum under the name of Emerald, which we had little difficulty in identifying as the same. The accompanying engraving shows the plum in natural size ; the color is greenish yellow, form roundish, of good size and excellent quality; coming in before the better varieties of Japan plums, and not being subject to rot, this plum will no doubt be of considerable value."

Seedling Plum.—From Hon. F. R. Latchford, Ottawa, Ont. The accompanying engraving of this plum appeared in the July number of *The Horticulturist*, where Mr. Latchford speaks of it as follows :

"A blue plum in my garden here is remarkable for its hardiness and productiveness. It most closely resembles the variety "Prince Englebert." The tree is said to have been planted about 25 years ago, and to be the only one of a number purchased at the same time which has lived. The trunk divides in three

parts almost at the ground, where it has a diameter of about 15 inches. It is absolutely hardy, and yields enormously about every second year. In 1898 I

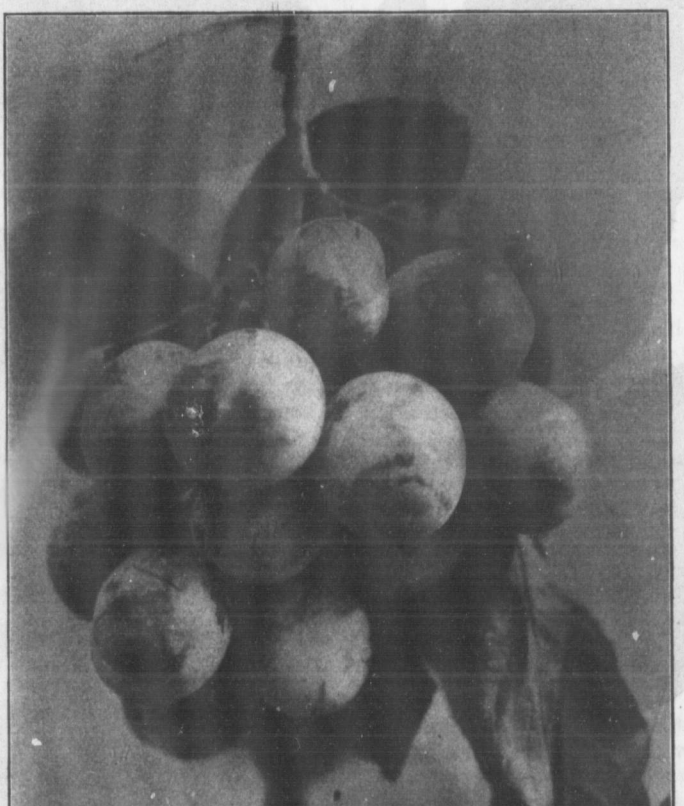
THE EMERALD PLUM (natural size).

gathered from it 440 pounds of fruit. At least 60 pounds more fell owing to the wind, or with branches which could not be propped. The size of the fruit is

medium to large, and the quality good. The variety seems a desirable one to propagate, especially in the East; and I shall be glad to give scions for budding, at the proper time, to all who may desire them. Our engraving shows a terminal cluster of the fruit."

The "Millionaire" Peach.—From E. D. Smith, Winona, Ont. Mr. Woolverton gives the following account of this peach in the October number of *The Horticulturist*:—

"We are in receipt of a very beautiful sample of peach to-day from Mr. E. D. Smith (Sept. 12th), which well deserves notice, providing the tree is hardy and productive and the fruit should average anything like this specimen. It very much re-



A Seedling Plum.

ssembles a fine sample of Early Crawford, but the form is rounder, the cavity and suture deeper, and cheek a darker red. The flesh is a beautiful yellow, of tender texture, juicy and highly flavored, quite equal to that of the Early Crawford, while the pit is smaller. Coming in at the season of the late Crawford, it has no competitor that we know of unless it be the Wonderful, which is also of about the same season. It precedes Elberta, apparently, by about a week."

The Charlton Grape.—From John Charlton & Sons, Rochester, N.Y. Mr. Woolverton has also noted this promising new grape in the October number of the *Horticulturist* as follows:

"We have received to-day (September 27th) three bunches of the new

Charlton grape. Messrs. John Charlton & Sons, of Rochester, the introducers, say, 'We send you a sample of our new grape which we allow to speak for itself'; and certainly if the vine is healthy and productive the qualities of the fruit are such as to ensure it a place among our very best varieties. A cross between Mills (Muscat Hamburg x Creveling) and Brighton, (Concord x Diana) two varieties themselves possessing most excellent qualities, we would expect nothing less than a first-class hybrid. The bunch is large, about five and a half inches in length, shouldered and very compact. The berry is large, skin tough, light red turning dark maroon and almost black at maturity; covered with a thin lilac bloom; flesh meaty, tender, pulp breaks up readily from seeds; flavor sweet, fairly juicy, sprightly, aromatic, very pleasant."

WELCOME BY MAYOR RUTLEDGE.

The Mayor cordially welcomed the Association, and said: I know of no Society in this country the aims and objects of which are of such universal application to all classes of the community. They seems to affect everybody. There is scarcely anybody in this country that has not a little ground to cultivate. Some have an acre, some ten, some a hundred, but the objects of your Association affect every man who has a bushel of apples or any quantity of first class fruit to sell; and I feel that your Association is doing a most wonderful work for the people of this country in instructing them in the mode of turning the result of their labor into cash. A man is going to plant trees, and your Association will tell him what kind to plant, and what soil to plant them in; how to treat them after they are planted; the enemies that are liable to attack them from the moment they are planted as long as they are alive; the enemies that are going to attack the fruit from its inception to maturity, and how these enemies can be destroyed or their effects neutralized; so that those who attempt to grow fruit may be enabled to grow first-class fruit. Then your Association deals with the question, what to do with this fruit when it is grown; how it is possible to take fruit and place it on the European market in about the same plight and condition as when it left the hands of the producer. When you have accomplished that, I submit that you have opened a mine of wealth in this country to every man who wishes to avail himself of the opportunities. The question of sending fruit to the English market in a sound and satisfactory condition will be solved on scientific and practical principles, and in a very short time. When these questions are pressing on the people they will be solved by scientific and practical men; and I am very glad to see that your Association produces a very large number of such men. I have been comparing your magazine, the *Canadian Horticulturist*, as it appears to-day with the production of ten or twelve years ago, and have been struck with the remarkable progress you have made in this publication, which to-day is beautifully printed and illustrated, and the mechanism and everything about it is first-class. It is a credit to your Association and to the country, and reflects the highest credit upon the editor. (Applause). There is scarcely one subject that any fruit-grower is in difficulty with, or wants to get information on, but if he is a careful reader of that journal he will find the very information he wants, written by practical and scientific men. I submit it is a publication of the highest importance to everybody, and the cost of it is next to nothing. One article in it on any subject on which a man wishes information is worth more than the price of the magazine for the year, and I trust that every fruit-grower in this section will be a subscriber to the *Canadian Horticulturist*. I will not detain you any longer. I again thank you, and trust that in the near future you will again be in a position to honor us with another meeting of your association. Applause).

The CHAIRMAN: On behalf of the Ontario Fruit Growers' Association I tender you our sincere thanks for the kind words you have spoken, Mr. Mayor, and the hearty welcome you have given us to your town. It is evident from the large number here this evening that you take an active interest in this work. The men who laid the foundation of our Association over thiry years ago laid it wisely and well. Although it was securely laid, it has proved to be a very moveable institution. To this fact, and the earnest efforts of your Mr. Huggard, we have to give the account for the pleasure of being with you this evening. Many of the members of our Association are largely engaged in fruit growing. Their constant effort is to secure the best varieties of fruit and to grow it to the greatest degree of perfection possible. We have made fair progress in this direction, but our customers say that some of us have not succeeded so well in in packing. Now, we are here to receive all the information that your local growers will give us, and we will be pleased to give any information that we can in regard to fruit or fruit growing, and do anything we can to advance the interests of horticulture and floriculture.

REPORT OF THE EXECUTIVE COMMITTEE.

The past year has been one of considerable progress on the part of our Association. The membership has increased about 400, and the number of affiliated societies now on our list is 42. The members of these societies are mostly amateur flower growers, as well as fruit growers, and ask that some attention to floriculture be given in the journal. With this in view, an addition of eight pages has been made to the *Canadian Horticulturist*, and much information given on this subject. These societies contribute materially to our strength, and give us a large field of usefulness. One of the strongest of these societies is the one at Hamilton, which is increasing in numbers every year.

The following lecturers were sent out to these societies in the spring of 1899:

Prof. Macoun, of Ottawa, to Brockville, Cardinal, Iroquois, Smith's Falls, Carleton Place, Arnprior and Kemptville.

Dr. Jas. Fletcher, of Ottawa, to Napanee, Brampton, Oakville, Hamilton and St. Catharines.

Alex. McNeill, of Walkerville, to Woodstock, Paris, Waterloo, Seaforth, Kincardine, Durham, Owen Sound, Orangeville, Meaford, Thornbury, Orillia, Midland and Burlington.

M. Burrell, of St. Catharines, to Lindsay, Campbellford, Stirling, Picton, Trenton, Cobourg, Port Hope, Millbrook, Niagara Falls, Port Colborne, Hagersville, Port Dover, Simcoe, Leamington, Windsor, Chatham and Grimsby.

These societies have reported their appreciation of the addresses given.

By-laws were prepared for the uniform guidance of these societies by Messrs. Thos. Beall and L. Woolverton, and copies sent to each society. These by-laws have been included in the report for 1898.

Your Executive have endeavored to use the power you have entrusted them with in the wisest possible manner.

The committees on transportation and freight rates were called together frequently, and the resolutions adopted were duly forwarded to the Minister of Agriculture at Ottawa, and resulted in securing for us the requests therein made, which are printed in their report.

Much public scandal against fruit shippers being caused by the 6,500 barrels of fraudulently packed fruit on board the SS. "Castilian," wrecked off Yarmouth,

N.S., your Executive prepared the following resolution, addressed to the Minister of Agriculture:

"Whereas, it is well known that fraudulent packing of apples is a very prevalent evil which is yearly bringing discredit upon the name of our Dominion, and ruining the English markets for our Canadian apples;

Whereas, as a matter of fact, Canadian apples are the finest in the world, and will bring the very highest prices in the British markets, if confidence in the packing can be sustained;

Whereas, we believe that about eighty-five per cent. of the apples grown in Ontario that are shipped to Great Britain are purchased, graded, packed and shipped by dealers, and, as it is to their interest as well as the interest of all concerned that a reliable brand should be established:

Therefore, resolved, that we do humbly pray that you will provide some remedy for the same.

We would suggest that certain marks or numbers be adopted to indicate certain grades and sizes of apples, and that it be made a misdemeanor for anyone to stamp these marks or numbers upon the outside of his packages unless the contents of the packages are in accordance therewith; that the name and address of the owner and shipper be always required on either the inside or outside of closed packages intended for export; and that an inspector be appointed, with power to open packages, and, if found fraudulent, to expose the offender.

And we further suggest that the terms used for grading be 'No. 1' and 'A No. 1,' 'No 1' to include sound apples reasonably free from worm holes, scabs or other blemishes, and to be not less than 2¼ inches in diameter, and grade 'A No. 1' the same, with apples not less than 2½ inches in diameter."

This resolution was adopted by large numbers of our Horticultural Societies, but objected to by the Burlington Horticultural Society, on the ground that all varieties could not be graded alike for sizes.

This matter is being considered by the Department, and we have no doubt that some scheme of grading and inspection of fruit packages will be prepared that will remedy the evil.

In view of the great importance of the grape industry, and the low prices prevailing in Canada, we prepared the following resolution to the Minister of Agriculture for the Dominion, and sent it also to various affiliated societies for approval:

"Whereas, the grape is one of the most important food products in Canada, and very large acreages are devoted to its production;

Whereas, of late years the yield has been so abundant that our home markets are glutted, and the prices so low as to leave little profit to the grower;

Whereas, certain varieties of Canadian grapes have superior flavor and excellent carrying qualities, as for example, the Rogers' hybrids;

Whereas, we are persuaded that British consumers need only to become acquainted with the excellence of such grapes to become fond of them:

Therefore, resolved, that we humbly pray that you will export in large quantities our Rogers' grapes to the best British markets, and that they be put up in neat and attractive packages and sent out in costermonger carts in such a city as Manchester, until the trade reaches a firm basis."

This resolution was approved by the societies most heartily and duly forwarded to the Minister of Agriculture at Ottawa, but the Department there was so discouraged by the failure of the previous attempts made with mixed varieties, of which Concord and Niagara were prominent, that they would not touch them in 1899. Having full confidence that our Rogers' grapes would win favor in the British markets, we referred the matter to the Minister of Agriculture for our own Province, asking that the Board of Control of the Ontario Fruit Experiment Stations be authorized to make a small shipment of Rogers' grapes to Manchester. Consent being obtained, our secretary was authorized to forward a few hundred small cases, containing about 20 lbs. each, to B. W. Potter & Co., Manchester, who have agreed to place them in the hands of retailers and costers in that market. The result will be awaited with much interest.

Much complaint being made in certain quarters against the drastic nature of the revised San José Scale Act, your Executive called meetings to get the expression of the growers regarding it, and, when the Commission was appointed, everything possible was done to facilitate their work. The opinion expressed by most fruit growers at these meetings was that the pest should be utterly stamped out since the infested area was limited to about twenty square miles.

The following is a copy of a resolution which was unanimously passed by a public meeting of fruit growers at Grimsby, on the 16th June, 1899, called by

your executive, and a copy was forwarded to the Hon. John Dryden, Minister of Agriculture:

"Whereas, the minute San Jose scale is the most serious enemy that has ever threatened the fruit grower;

Whereas, the Government has passed an Act which is calculated to save the fruit orchards of Ontario from being infested with this scale;

Wheras, certain persons, whose orchards were found to be affected and who were ordered to have them destroyed, in their own and public interest, have waited upon the Minister of Agriculture asking that the law be not enforced;

Therefore, resolved, that we consider the Act to be all important in the interests of the farmers and fruit growers of Ontario, because it is the only sure way of saving our orchards from ultimate destruction by this terrible pest, and that we consider the interests of the many of much greater importance than the interests of the few.

We, therefore, express our deep regret that the operation of the law has been suspended at this season of the year, when the scale is beginning to spread and when a fortnight's delay may cause irreparable damage, and we earnestly beseech you to enforce the law, allowing the findings of the Commission, lately appointed by you, to govern your action with regard to future years.

And we further pray that you consider the interests of those growers whose orchards have had to be destroyed by so increasing the amount of compensation that they will have no just reason for complaint.'

Your executive also wrote the Hon. Sydney Fisher asking that the resolution of our Association asking that Mr. W. M. Orr be appointed to the charge of Ontario fruits at the Paris Exposition be considered. The reply was that Mr. A. McD. Allan, of Goderich, had already been appointed to superintend the horticultural exhibits of Ontario (including the fruit). The executive then wrote that the interests of the Ontario fruit men were so important in the foreign markets that, in our opinion, it was most desirable that the Vice-President of our Association be also sent over to assist in the representation of our interests.

Mr. Allan visited the executive in August, asking the co-operation of our Association, of our Experiment Stations and of our Horticultural Societies in making up about 800 bottles of Ontario fruits in advance, and in supplying fresh fruits for cold storage for the Paris Exposition. In this work the Secretary has written about 150 letters and, in response, has secured liberal contributions of our choicest fruits. Those for bottles were forwarded to Prof. H. L. Hutt of the O.A.C., Guelph, and the apples and pears for cold storage to Auguste Dupuis, Secretary for the Paris Exposition, Ottawa.

Our plant distribution has given great satisfaction. The following is a list of the plants sent out:—

737 Yellow Rambler rose, 388 Pink Rambler rose, 412 White Rambler rose, 504 Ampelopsis Veitchii, 262 Eleagnus Longipes, 261 Ginko, 420 improved Lombard plum, 291 Hughes plum, 228 Saunders plum, 182 North Star currant, 320 Columbian raspberry, 26 Crimson Rambler rose, 1 Dempsey pear, 5 Wickson plum.

A few of these had been winter killed, but were replaced free of cost. In response to inquiries as to whether the $500 or $600 spent in premiums would be better spent in enlargement of journal, a great difference of opinion has been expressed, some strongly urging one way and some another.

Your Executive hopes that during 1900 we may be able to attain both these ends. The journal has been embellished with numerous half-tone engravings, a fine new cover, and, with the exception of one or two months, enlarged to forty-eight pages. During 1900 we propose to enlarge the page and widen the columns and thus give considerable more matter with the same number of pages. We also propose a still more attractive cover.

In the carrying out of all this work we have expended as little money as was in keeping with the best interests of our Association. We have paid $153.00 for assistance to the Secretary in bookkeeping during the portion of the year, and will need to make a regular allowance for this in 1900.

Owing to the new postal regulations, we found it necessary to have the journal mailed at Grimsby, instead of Toronto, as heretofore, which made it necessary to engage a mailing room near the Grimsby post office. The same regulations also require postage on the journal which has amounted during 1899 to $41.36.

The additional number of journals printed, 5,000 a month, instead of 3,000 as per contract, and the additional eight pages, making forty-eight and cover, instead of forty as per contract, has increased the expense of printing the journal to $170 a month, which has been further increased in certain months by the demand for samples and for advertising space.

CONSERVATORY POSSIBLE IN OUR HOMES AT SMALL COST.

By Dr. Harrison, Keene.

In our younger days we were satisfied with the flowers that were in the windows, and we took much pleasure and so much joy out of them. Why, you as well as I, sir, have been in many a home, and seen with what joy and pride the lady of the house looked at that spindly thing in the kitchen window. It was the dead of winter, but it had a few sickly green leaves on and it was a joy to her heart. But as we have advanced in our social surroundings and in our better equipment all the way round, the fact is that that esthetic sense—which is one of the senses that has not been taken cognizance of as it should have been—demands a better quality of flower, and a larger variety.

Look at this exhibit and think of the fruit we had when we were boys. I had the pleasure of going to a school, walking a mile and a half, and it was a joy to our hearts when December came that we could go over to a crab-apple tree with apples about that size (showing) that would draw your mouth up. Were any of you in Toronto during the last crysanthemum show at the Pavilion? Look at those massive things. You can have those in your homes. Look at those ten inches in diameter. Look at those orchids which stood up on that dais; you can have these things. Look at those carnations which were so charming, and those roses which Dunlop had there; we can have those too, and not at great expense. How? That is the first question. There are two ways within the reach of every person of average means. In the first place, in constructing our verandahs, construct them with the idea that they are in touch with our principal living room, whether that is your library or dining room, or whether it is a sort of half withdrawing room. A wide verandah, a verandah on which you can get a large amount of side light; then you can have a bench along the side of that, and you would be surprised — I have tried it for myself — what a quantity and what a richness and what a fullness of bloom is possible. Now, you know that in so many of our homes now, instead of the old wood stove or the old base burner coal stove, we have our furnaces in the cellar. You say, "Well, what are you going to do with hot air?" You can do something with hot air, but not so much as with hot water; and there is no furnace, whether for wood or coal, in which you cannot put a little coil and carry that into the small conservatory and give it a generous, even heat which will give you beautiful flowers. Try to grow a certain class of flowers or roses, say carnation violets, in any ordinary room, and you cannot do it satisfactorily. Your roses will be overcome and devastated with aphis, and your carnations will fail to open up in their beauty, and the violets will religiously refuse to bloom satisfactorily and give their fragrance. Why? Because the temperature in the ordinary room is up and down, up and down, and that is inimical to plant prosperity. They do not like it any better than we do, the see-saw of life, and they don't prosper on it any better than we do. It is irritating, and they resent it at once. Another form of conservatory, which is more desirable and cheap—remember I am not talking about one that is the most desirable and expensive, not one that with its span and with its arched glass roof is one of the luxuries which are only available to the rich—but I am speaking of

that which is available to those of smaller means, that is, to build on the side of the house a lean-to conservatory. I have one in my mind's eye now, 12 feet long, 8¾ feet wide, with 100 plants that are doing sterling duty the whole year round, and supplying the house with a profusion of bouquets. That is, a small house, but you can have it anywhere 10, 11, 14 feet wide, and whatever length you want; but by giving a top glass to it you have plants that will grow straight up. It is just the ideal thing for your carnations. They open up beautifully without that crack on the side which is so apt to be with side light where they turn their faces. Having the top light you bring your plants nearly to the glass so as not to meet so much of the refractive rays, causing your plants to be healthier and sturdier in growth, and the flowers themselves to be richer in tint and sweeter in odor. Carry out the same idea again in regard to heating. If you do not put in a heater by itself, carry from your house furnace a coil and you can run your hot water underneath your plant shelves, or you can run it above it, or run each pipe along the glass. The advantage claimed for the latter plan is that the air that comes chilled from the glass becomes heated before it falls on the flowers. Either take in a verandah and make a conservatory of it, or build a lean-to and make a conservatory of it. You can take the latter and make $100 build your concern, put in your heating apparatus if you have not already a furnace in your cellar, and stock it with a fair variety of plants which you could not grow in your living rooms to advantage. Last year I saw a little conservatory of that sort 9.6 ft. wide, 24 feet long, with 500 plants, with bouquets of roses and carnations, geraniums, fuschias, and a large number of the other plants, supplying not only the household but a church on Sabbath day with bouquets, and furnishing flowers for nearly all the sick families within the radius of some three or four miles; and I am positive that that did not cost $80 in its whole outfit. It was built and heated by itself, which is the better way, because then you can regulate it. One of the old "Giant" stoves was taken and in the top of it there were five coils of inch pipe, and then that pipe was carried with ten coils under the bench, six coils on the back wall, and the whole cost of that plumbing was as follows: the cost of the stove was $6; the mason was paid $3.50 for bricking it in—the mason found the bricks; and the plumbing cost $22; the owner being a handy man built the walls himself, bought the material at the sash factory and had a carpenter two days to get the thing closed; and with that small cost he had all that beauty for himself and others. Do not attempt to put everything you can read of in the books into your conservatory, nor to put all that you read of in books in practice. Go slow. Feel your way. We are always safe in starting with geraniums. The geranium is one of God's greatest blessings in the flower line to humanity, because it wlll stand almost any treatment and show a smiling face. There are some plants that are just as pernickety as pernickety can be, but you must understand their pernicketiness or you will not get the pleasure from them. You who love horses do not want a horse that goes like a tame sheep, but you want one that makes you feel the ribbons, that it is a thing of life, and that you control it. That horse steps out and you feel that you can pass John A. Thompson as you go down the street. Flowers need to be handled in the same way. It is said that roses would be as sweet under any other name. I do not know. I never saw roses under any other name; but you know they are sweet and desirable. The plant that would be more amenable next to the geranium probably is the carnation; but those of you who are lovers of flowers know that what we called carnations when we were boys would not pass as flowers to-day. Look at those carnations, great beauties, splashed, white and rose, yellow, mauve, almost all the shades of color, and so sweet and so fragrant, and they can be grown in a little conservatory like that, so that a couple of dozen roots will give you carnations galore. Then next to that, in a small conservatory, it is desirable to have that which is ornamental. Then you come to the palms. Keep to the Kentias;

they will give satisfaction. There are certain plants which have somewhat been neglected in the greater majority of sections, and that is the begonia family—beautiful plants that require a little attention and little study and which are most desirable and full of beauty. They would be almost sufficient for any amateur to start with and would give him satisfaction. Where there are apples and music there should be flowers. You know there are birds in so many homes, and what a dirty thing that sweet little canary is, and how often you have to take the dust pan to gather up those broken seeds; but you could have fish—a small aquarium fitted with some of those Mediterranean carp known as gold fish, or even some of our own minnows or shiners or red roach, or beautiful sun-fish. A few of those in an aquarium, with a certain amount of plant life so as to balance your animal life with your botanical life. Water should not require changing any oftener than two or three months, and feed them a little German feed once a day, and you have got a thing of beauty and a joy forever. Their sinuous and graceful movements are a charm, and you can sit and watch them with pleasure, and they are ever so much more cleanly to look after than Dicky is.

BEAUTIFYING COUNTRY HOUSES.

By Prof. H. L. Hutt, O. A. C., Guelph.

The sturdy pioneers who first settled this country came with a determination to subdue the forests and to hew out for themselves homes in the wilderness. To them the idea of levelling a lawn and planting shade trees or ornamental shrubs would have been ridiculous. But we have now reached a period in the country's history when comfortable homes are thickly dotted throughout the land, and more attention is being given to the beautifying of the home surroundings. Not only is the skill of the landscape gardener more and more in demand, but there is a call for information on the subject by those who have not the means to employ a professional gardener. In this brief paper we shall attempt merely to call attention to some of the leading principles which should guide in laying out and beautifying the surroundings of a country home, and what applies to the country home, will in many cases apply equally well in the ornamenting of a town lot.

The first idea to be grasped is that the most beautiful scenes are as a rule more or less natural. We must, therefore, accept nature as our teacher, and study the materials and combinations which go to make up natural beauties.

The materials with which the landscape gardener has to deal may be classified as natural and artificial. The natural materials are the ground, grass, trees, shrubs, vines, herbaceous plants and annuals, and in some cases rocks and bodies of water. The artificial materials are trees and shrubs clipped into unnatural shapes, geometrical beds of improved flowers, terraces, walks, drives, buildings, fountains, statuary, etc. The skill of the landscape gardener consists of the judicious use of these materials. Let us now consider some of these a little more fully.

The Ground. One of the most important features in the ground surrounding a home is the contour of its surface. This is what gives character to a place. A low lying lawn with something of a depression in the centre has a tame appearance, while a similar lawn with but a slight crowning in the centre has an altogether different look. Sometimes a perfectly straight surface line is pleasing, and the level lawn is more in keeping with the place and its surroundings than any other could be, but as a rule some variation from the straight line is preferable. In nature we take more delight in bold outlines of hills and valleys than we do in level

stretches of country. This is because we love the variety which hill and hollow afford, and this suggests the desirability of introducing undulations in landscape gardening whenever the size of the grounds and other circumstances will admit.

The buildings should, of course, be on the highest elevation. and the grounds should be made to slope away from them. On a steep hillside the grounds may have to be terraced. This, if well done, adds much to the appearance of a place, but likewise adds considerably to the cost. Whether the grounds are flat or rolling the irregularities of the surface should be levelled and smoothed so that the mower may be worked easily. Wherever much grading or filling has to be done due allowance must be made for settling, and a few inches of good surface soil should always be left on the top. The character of the surface soil is a matter of great importance, because on it depends the luxuriance or poverty of the grass and trees growing upon it.

THE GREEN SWARD. There are two ways of clothing the ground with grass, either by sodding it or by sowing grass seeds. On small plots or steep banks and along borders sodding is the quickest and most satisfactory method, but on large areas seeding is not only the cheapest but the best. In preparing the ground for seeding it should be plowed, harrowed, rolled and made as fine as possible, and as a final preparation nothing is better than going over it carefully with a garden rake.

The kind of seed to sow is a matter of importance. Coarse grasses, such as timothy, are not suitable for lawn making. Many of the finer and more delicate grasses may be obtained in "lawn grass mixtures," but the most satisfactory mixture we have found is made up of equal parts by weight of Kentucky blue-grass, red-top grass, and white Dutch clover. All of these are hardy and stand well the extremes of our climate. The seeding should be done on a still day, when there is no wind to carry the lighter seeds. Thick seeding should be the rule. Three or four bushels per acre is none too thick for seeding down a lawn. In fact the grass should come up as thick as the hair on a dog's back. After the seed is sown it should be lightly raked in, and if the weather is dry it is well to go over the ground with a hand roller. The work of making a lawn may be done at almost any time of the year, but where much levelling and filling is necessary it is well to do the grading in the fall, so that the ground will have finished settling by spring,and then the surface may be raked over as soon as it is dry enough to work, and the seeds sown as early as possible. A lawn sown early in the spring should be nice and green by the middle of summer, or seeds sown early in the fall should give a good grassy carpet for the next summer.

KEEPING A LAWN. To keep a lawn in prime velvety condition it should be mowed frequently, particularly during the season of rapid growth. The mowings should be so frequent that none of the cut grass need be raked off. This is the practice followed on well kept city lawns where men, money and mowers are available. On the farm where these articles are sometimes not so plentiful, and where the area to be gone over is usually greater, it may be kept in very respectable condition with the ordinary farm mower, the cutter bar of which should be set low and the knives kept sharp. On the farm the front yard and back yard, the lanes and the roadsides should all be levelled, seeded and put into such condition that they can all be gone over with the farm mower, and if the mowing is done as often as the grass is high enough for the knives to catch it nicely the improvement made in the appearance of a place would in many cases add nearly 50 per cent. to the value of the property.

To maintain a luxuriant growth and a rich dark green in the color of the grass, the lawn should occasionally receive a top dressing of stable manure in the fall. The soluble portion of this is washed into the ground by the fall and spring rains, and early in the spring the coarsest portion of it should be raked off.

TREES AND SHRUBS. In the trees and shrubs we have some of the finest forms of natural beauty. They present a great variety of ornamental qualities, in habit of growth, in size, in color of bark and foliage and in their flowers.

Taking the trees first, they may naturally be divided into two classes, the deciduous and the evergreen trees. If time permitted we could give a lengthy list and mention the special claim of each to a place on the lawn, but we must be content with mentioning only a few of the most desirable. Among the maples we have the sugar maples, the soft maples and Weir's cut-leaved variety of the same, the Sycamore maple and the Manitoba maple, which is particularly valuable on new places on account of its rapid growth, but along with it should be planted some of the more durable trees, which will come in and last long after the Manitoba maple has served its purpose. As a successor to it we know of none better than our native American elm. In its finest form, with feathered trunk, high spreading arms and long, pendulous branches, this is, in our opinion, the most stately and graceful of our native trees. On large grounds, where there is room for variety, some of the rugged oaks and fragrant lindens add a charm to the scene. The cut-leaf weeping white birch is very ornamental in both summer and winter, and shows a striking color contrast, particularly when placed so as to have for a background a group of evergreens or a dark colored building.

Among the evergreens the pines and spruces occupy a first rank. The Austrian and Scotch pines make handsome specimens, although in its younger days our native white pine is equal to, if not superior to, any of the foreigners. The same might also be said of our native white spruces, as compared with its more vigorous relatives from Norway. But for a handsome specimen of nature's coloring let us have the dainty little blue spruce of Colorado. Among the arbor vitaes, junipers and retinosperas, we have some very beautiful forms, such as the pyramidal and globose arbor vitae, the tall Irish juniper and the plumose retinospera.

ORNAMENTAL SHRUBS. For a list of some of the most desirable and hardy ornamental shrubs adapted to our northern section, I cannot do better than refer intending planters to the valuable list given in Mr. Macoun's report in the Central Experimental Farm Report for 1897. One hundred species and varieties are there mentioned, with twenty-five of the most desirable marked. If we were compelled to reduce the list to half of that number, we would from our own experience select the following: The Caragana or Siberian pea-tree, Hydrangea paniculata, .he Tartarian bush honeysuckle, the mock orange or Philadelphus, the golden currant, Spirea Van Houtii, the golden elder, the old-fashioned lilacs in variety, the snowball or viburnum, and last but not least, roses in variety.

THE ARRANGEMENT OF TREES AND SHRUBS. To artistically arrange and distribute a collection of trees and shrubs on the lawn requires much more skill and judgment than to set out trees in a straight line in an orchard. The following are a few of the principles which should guide in lawn planting:

1. Follow as nearly as possible the natural order of arrangement. Nature does not plant trees in straight lines, but scatters them about in irregular profusion, in too much profusion, in fact, to be followed out fully in lawn planting. It is often necessary, therefore, to modify the natural arrangement to meet the needs of the case. One has said that "the aim should be to exhibit nature idealized rather than nature real." A prominent American landscape gardener tells us that for his first lesson in arranging trees on the lawn he was told to take in his hand as many stones as he had trees to plant; to stand by the house and throw them in the direction he wished the trees to stand, then plant wherever the stones fell.

And he says that with a few slight modifications the effect was all that could be desired.

2. Arrange to give an air of breadth and expanse to the place. This is a most desirable effect, and is secured by preserving a more or less open lawn in front of the house, by scattering and grouping the larger trees at the outside of the grounds so as to more or less hide the boundaries. This suggests an unlimited extent beyond what the eye can see at any point. Another means is by opening vistas between the trees, looking out upon distant scenes beyond the boundaries. In this way we may shut out undesirable objects, and we may appropriate to ourselves desirable distant scenes, such as a wooded hillside, a stretch of river or a church spire, and thus make our little grounds seem like part of an extensive park.

3. Arrange for trees to give comfort as well as ornament. One of the first considerations should be to shade the buildings from the heat of the sun and to shelter them from the sweep of the prevailing winds. On the south and west should be planted a few of the largest shade trees, such as elms or maples, not so close as to exclude the light from any of the windows, nor so that any of the branches, when the trees are full grown, will overhang the house, but close enough that their shade will fall upon it. In all planting the effect should be watched from the principal windows, and we must take into consideration what the result would be when the trees are full grown.

As a protection against the sweeping winds of winter some of the strong growing evergreens, such as the pines and spruces, are most useful. Thick belts or clumps of these should be planted in the most exposed quarter, and along with them may be planted a few of the light colored deciduous trees. In winter the evergreens give a cozy appearance to the place, and in summer their sombre darkness is relieved by the bright green of the deciduous trees.

In arranging the smaller trees and flowering shrubs these may be grouped into ornamental clumps, or occasionally fine specimens may stand out by themselves. When grouping into small clumps, the largest specimens should be planted in the centre, and along the borders the smallest shrubs should come to the front, so as to blend the grass with the taller trees in the background.

Beautiful color combinations and contrasts, both in flower and foliage, may often be arranged if the planter understands his work. For instance, a beautiful color contrast is obtained by planting a purple-leaved barberry near a golden-leaved spiræa, or a dark Austrian pine as a background for one of the light colored Colorado spruces.

VINES AND CLIMBERS. Among the vines and climbers we have a number of beautiful species which may be made very effective in many ways in beautifying the home surroundings. They are particularly valuable on small grounds and town lots as they take up so little room, but they are also quite as valuable in beautifying a country home. One of the most hardy and vigorous is the common Virginia creeper. This is excellent for covering a summer-house, a screen or any unsightly wooden wall. As a covering for a brick or stone wall the Boston Ivy or Ampelopsis Veitchii is one of the handsomest. In northern sections it requires winter protection for the first few winters, but when once established it grows rapidly, and will soon convert a brown or red front into a wall of living green. For a handsome, hardy flowering climber we have nothing to equal Clematis Jackmanii, with its large purple flowers, and Clematis Paniculata with its innumerable small white flowers late in the fall. Hall's climbing honeysuckle and the Chinese Wistaria are beautiful climbers well adapted to climbing verandah posts or festooning a balcony, but they will not stand our winters without protection except in the southern parts of the Province.

WALKS AND DRIVES. These are not in themselves very ornamental, but they are a necessity and have an important effect on the appearance of a place. When properly located they convey the idea that the place is inhabited, and they seem to impart an air of welcome.

As the walks and drives are artificial and not in themselves ornamental there should be as few of them as possible. Business roads should as a rule be straight, but pleasure drives give more pleasure if they are laid out in graceful curves. The curves give variety and help to relieve the angular outlines of the buildings. They should not, however, be introduced at the expense of utility, and should offer no temptation to take short cuts across the grass. Whenever a curve is introduced there should be trees or some other object in the road to make the curve appear necessary. If they are not there they may be planted when the drive is laid out. A curve without some apparent cause for it looks meaningless and affected.

The drive should wherever possible enter at the side of the lawn, and curve gently around towards the buildings as though it were the nearest and most natural way of approach. It should be dotted here and there along the sides with trees and shrubbery which partly screen the buildings from sight, so that we keep getting a different view of the house as we approach. This gives variety and pleasure, and always leaves just enough unseen to make us feel like following it up to see where it leads or ends up.

The width the drives and walks should vary according to their length and the amount of travel upon them. If long and much travelled the drive must be wide enough for two rigs to pass easily, but if short and not so much used, 8-10 feet or room for one wagon is enough. Walks or foot-paths will vary from 3-5 feet. The drives should be properly graded and made slightly crowning from the centre to the sides so as to give good drainage. If good gravel is obtainable they should be covered with gravel, raked smooth and rolled hard.

FENCES. As a rule fences enter largely into most landscapes and are worthy of note. They are artificial materials, and at best they are necessary eyesores, but in the majority of cases their necessity is only imaginary. If all of the really unnecessary fences were removed, and the ground which they occupy levelled and seeded down or put under crop it would make a wonderful difference in the appearance of the country. It would remove a great harbor for weeds and insects; it would effect a great saving in labor and expense, and it would remove one of the most striking features which advertise the slovenly farmers all over the country. The only fences necessary, or which should be necessary, are those for the purpose of fencing in our stock, and not fencing in that of our neighbors. These, in many cases, might be movable or temporary. Roadside fences might be dispensed with, the ground levelled and seeded and the grass kept mowed from the boundary to the roadbed. Bill Nye says that "The farm without a fence in front of it looks as if the owner were honest and thought his neighbors the same." If a permanent fence is necessary let it be as inconspicuous as possible, or let it be an ornamental hedge.

Some of the other materials of landscape gardening are trees, trimmed into shape or out of shape, fountains and statuary, buildings, flower beds of geometrical designs. All of these artificial materials should be used with as much discretion as one should use in wearing fine jewellery. The more the artificial prevails in the general surroundings the more these can be used without giving offence. In proximity to large and expensive buildings, or in extensive parks, they may have their place, but on the farmer's lawn, where most of the surroundings are natural, and where the buildings are not elaborate and costly, they would be altogether out of place.

A KNOWLEDGE OF FRUIT GROWING.

By J. E. Farwell, Whitby.

Allow me to join in acknowledging the honor you have done our town by holding your present meeting here. Your meeting in this section of the county, where fruit growing has received considerable attention, will stimulate and extend here the great industry in which you are so actively engaged and so deeply interested.

Glancing through the reports of your transactions, and noticing the wide scope of your discussions, and the care and attention which the minutest details connected with your business have received, it seems a hopeless task for an outsider to say anything which will interest you or your visitors. Perhaps I may be pardoned for throwing at you some odds and ends about the subject.

There is no branch of work connected with the cultivation of the soil which so interests the young and old as fruit growing. One might hope that the injunction against covetousness was not intended for small boys. If it was they have been, are now and ever will be great sinners, world without end, as far as fruit is concerned. There have been good boys who have never cast longing eyes at ripe fruit belonging to others, but their goings to and fro on the earth have been as rare as angels' visits. Do not *we* know it? Have we not been there? And our successors in raids upon orchards and gardens, are they not with us to this day?

The old song, "Do they miss me at home?" was well parodied in the words:

> "They don't wish me at home, though they miss me,
> Dark nights were my desire for this reason,
> Some orchard I would visit alone,
> Next morning some farmer would mention
> My name with some fruit that was gone."

There *are* fruit growers who can manage to grow fruit where there are boys and yet have little trouble with them, and who are spared the annoyance of losing the finest fruit just about the time it is needed for exhibition purposes. Allow me to suggest as a subject for a useful paper, "The experience and practice of the fruit grower who can so manage matters as to keep his fruit, his temper and the friendship of the boys."

It is well not to be too hard on the boys. Perhaps this desire to get good fruit, where it is to be got, is the effect of heredity. Our ancestors, the grand old gardener, Adam and his wife, had shown a liking for fruit that did not belong to them, and so furnished Milton with the material for England's greatest epic poem:

> "Of man's first disobedience and the fruit
> Of that forbidden tree, whose mortal taste
> Brought death into the world, and all our woe
> With loss of Eden."

This growing and caring for fruit is a most respectable, ancient and honorable occupation. You see it was practised by the "first families." Tennyson in his "Clara Vere de Vere," makes the young yeoman say to the Earl's daughter:

> "Trust me, Clara Vere de Vere,
> From yon blue Heavens above us bent
> The grand old gardener and his wife smile
> At the claims of long descent."

Before the first theft of apples humanity had an uncommonly easy time of it in dressing and keeping a garden without thorns and thistles in it. Perhaps they had not to contend with *Engonia subsignaria, Diosophila ampelophila*

aspidiotus conchi-formis and sixty more of the pests which trouble the soul and tax the enery and ingenuity of the fruit grower; at any rate they had the pleasure of eating their bread without sweating to get it. The man was turned out of the garden. Someone, I think Downing, says: "He has always tried to get back again." There is perhaps a disposition in man to take to a savage life, but if you can keep him within the bounds of civilization he is sure to go into the gardening business, a "fruit garden," a "root garden," or if nothing better can be had, a "window garden."

Throughout sacred and profane history, mythology and poetry we have abundant references to fruit and fruit growing. We find the figs, grapes, the pomegranates of Eschol and the olive trees of Gethsemane. We have the golden apples which Ge the earth presented to Hera on her marriage with Jupiter, and which the Hesperides were set to guard lest the same old game of apple stealing should go on; and it is said, that the apples were stolen by Hercules in the performance of one of his twelve labors.

Then we have the golden apple of discord which the unfortunate shepherd Paris had to award to the prettiest of three goddesses. Of course he pleased no one but Aphrodite to whom he awarded it, and so caused the Trojan war. "The sour grapes" which the fox could not reach, the disappointed hopes and crushed expectations of mortals, like

"Dead sea fruits which tempt the eye
But turn to ashes on the lips."

When one has amassed a fortune of five hundred thousand dollars he has a "plum" two hundred and fifty thousand is "half a plum." The plunger on the race course or in Bank stocks is bound to have a "plum" or a "plum stone." Of all the fruits, the poets seem to prefer the apple, one of them says:

"So sweetened with the Summer light the full juiced apple,
Waxing over mellow, drops in a silent autumn night."

And just then and there Sir Isaac Newton, the philosopher, seeing the apple drop *down* wondered why it did not drop *upwards*, like a puff of smoke, and then he sought out and thought out the great law of gravitation.

Why not plant apple trees along side the highways for the wayfaring man, the small boy, and for the poor and needy? Their shade is quite as good as that of many other shade trees. I have pleasant recollections of seeing somewhere in Europe rows of apple trees upon the sides of the highways "where fragrant blossoms fringed the apple boughs."

Do people realize the advantages of planting apple trees or other fruit trees? Do they realize that while they contribute to the beauty of the landscape they tend to refine and elevate the owners? Bryant has said:

"What plant we in this apple tree?
Sweets for a hundred flowering springs,
To load the May winds restless wings,
When from the orchard row he pours
Its fragrance thro' the open doors,
A world of blossoms for the bee,
Flowers for the sick girl's silent room
For the glad infant sprigs of bloom
We plant with the apple tree."

Show us a country where there can be raised good wheat, good apples, and good speckled trout, you have shown us a country where a white man can live and be glad that he is alive, for there he is sure to find a good soil, a good climate and good water.

Cannot our schools be made to contribute to the success of the fruit growing industry? Cannot pupils be taught not only to refrain from injuring fruit and other trees; but also have inculcated a love for them and a thorough appreciation of the advantages to be derived from them? Can they not be impressed with the idea of the millionare founder of the Gerrard College that if he knew he should die to-morrow he would wish to plant a tree to-day, and so have done something to leave the world better than he found it.

I have for a long time had a theory that it would be a great benefit to the people of this Province if the study of Latin, Greek, German and French were discontinued in one-third or one-fourth of our High Schools and Collegiate Institutes, and that manual training and instruction in the use of tools and implements and in subjects having a practical relation to agriculture, fruit growing, mechanics, manufacturing and mining should be substituted therefor. When one remembers that the number engaged in teaching and other professions is but small compared with the great army who are engaged in agricultural, mechanical, manufacturing mining and commercial pursuits, and the small amount of taxes paid by professional men as compared with the large amount paid by the producers of wealth, one might well suppose that the struggle would have all along been, how to raise the means for paying instructors in these languages and that there certainly have been found in every county at least one school for teaching all that could be taught there to aid the great producing classes in their struggle for existence.

Can such subjects be taught under such surroundings as will keep the pupils in line with their intended occupation and not sidetrack them into the professions? Is it not a well-founded complaint that when once the boy, whose parents desire him to follow farming or a trade, or to engage in business, gets into a high school there is but small chance of getting him back to the farm, the workshop or the store? Sir Lyon Playfair says that "schools should aid boys in discovering the class of knowledge best suited to their mental capacities, so that knowledge may be specialized to cultivate the powers of men to the fullest extent."

If the carrying on of agriculture, mining and manufactures in the best possible manner is of any importance to this country, it is about time some provision was made for schools which will "mould the minds of boys according to their mental varieties. By the adoption of this plan, boys not destined for the professions would receive the same instruction in English, mathematics and commercial subjects as those who are to take up a profession. The sons of farmers would receive instruction in zoology and botany, which would explain the blights, the insects which attack the grain, roots and fruits, and the means of preventing injury from these as far as known, the value of different kinds of manures and the relation of chemistry to agriculture. The teacher of science would give instruction in mineralogy and geology, particularly as to exploring for valuable minerals, how and where to find them, and what to do with them when they have been found. If the mineral wealth of this country amounts to a tithe of what it is reported to be, it is time more of our young men were being instructed in the above matters. Is it not time the experiment was tried? One-third of the expenditure of the public money for schools at least, should be in the way of practical education. Have we yet exhausted the agricultural and fruit-growing capabilities of Ontario's soil? Is there anything in it yet for the farmer and the fruit grower? And are there not yet abundant opportunities for making a living for independence, nay, for a competence, to be found in cultivating the lands of Ontario? Will not the teaching of subjects in connection with pursuits in which the pupils are to engage tend to hasten an era of prosperity which the Province has never known?

THE SAN JOSÉ SCALE.

By G. T. Powell, Ghent, N.Y.

A request has been made that a few words might be said here upon the threatening danger from the San José scale to the fruit-growing and other interests of this Province. In a very brief manner let me point out the fact that the greatest hindrance to the profitable pursuit of horticulture is from the insect damages that come to trees and to fruits. I want to mention only one or two illustrations. A little more than ten years ago there was introduced into Massachusetts what is known as the Gypsy Moth. An entomologist from France brought over to this country a few of those Gypsy Moths to cross with the silk worm, thereby hoping to get an improved silk worm that would be of great value to America. While he was experimenting with these few Gypsy Moths there came a gust of wind that blew a few of them out of the open window near the vicinity of Boston. He closed his window, went out immediately, but he could not find them. No further thought was given, but about two years after that there was discovered near Boston the ravages of a caterpillar that was becoming somewhat alarming. The forests were being denuded of their foliage, and that was the introduction into this country of the Gypsy Moth, with its very destructive work as it is being carried on to-day in Massachusetts. It has cost the State of Massachusetts nearly one million dollars simply to hold it in check. The annual appropriations are to-day $200,000 just to keep it within limits near the city of Boston. It has denuded their parks, and it has entered their forests, and if it gets beyond the control of the present commission, it threatens to destroy the vegetation of the State of Massachusetts. The Gypsy Moth deposits its eggs in the grass, in the trees, anywhere, in the stone walls, in the crevices of rocks, and it requires to day a force of 500 men who are to-day fighting it along different lines with fire, even going into the rocks and the stone walls and injecting kerosene oil, and fire to follow it—this is the manner in which the Gypsy Moth is being fought. Men are being sent to the tops of high trees, great oaks and elms, with ropes fastened about their waists. They swing themselves out to the outermost branches of those great trees, there to pick off those egg nests, and you can imagine the great amount of labor required to just simply keep this great pest in check. Now the Brown-tailed Moth is even worse than this. The Brown-tailed Moth multiplies so rapidly that when the caterpillars begin to migrate they simply cover the sidewalks and the streets. They also cover the sides of buildings and they get inside the houses and into every part of the house—into the closets and into the drawers and bureaus, and into every nook and cranny. During the month of September last they were so numerous upon the streets of Lynn that the horses and vehicles passing over the pavements, and the people walking along the sidewalks, crushed them in such numbers that during the hot month of August the city of Lynn was threatened with a pestilence. Now, these are illustrations which I have mentioned to point out the importance, in the discovery of a serious insect pest within your territory, that the most vigilant means be taken to stamp that thing out upon its first discovery if possible.

Now the San Jose scale comes in here at this time as a threatening danger to our horticultural interests. It was my privilege during the past winter to have spent several weeks in Maryland attending the fruit growers' meetings and farmers' institutes. I saw the workings of this pest where it had committed its worst ravages in that state. I remember passing along and through one peach orchard containing 27,000 trees, and every tree destroyed, absolutely dead, in that peach orchard from the effects of the San Jose scale. So you can see the extent to which the damage is perpetrated when an orchard of this number of trees was absolutely destroyed by this Scale. It is surprising how the Scale is

spreading not only in the states, but here in your own country; and it becomes of the utmost importance that the Ontario Fruit Growers' Association in its work shall point out, as it is doing so wisely, the danger that threatens your great horticultural interests from this pest. We have much to learn about it, more especially in relation to its control; but this fact is evident, that while it seems to do its worst work in the warmer climates, yet it is possible for it to become acclimated almost anywhere, and there is where its danger lies. There do not seem to be at present parasites that are following it up. That is the trouble with the Gypsy Moth of Massachusetts. The parasites which keep it in check in France do not exist or are not here, and hence the moth has its full swing, and therein lies its great danger. In New York state we have the Scale to a far greater extent than I desire to admit. It is surprising where we are meeting it. In my own county of Columbia, along on the Hudson River, while conducting a series of lectures upon natural sciences touching upon the point to which the last speaker so forcibly alluded—the necessity of introducing into our public schools the studies of natural sciences, which may be applied to agriculture and horticulture—going through those beautiful gardens and orchards to discover some insect life that had been treated during the afternoon lectures, I was surprised to come upon a beautiful pear orchard, and in the centre of it found fifty trees that were in a declining condition. In calling the attention of this class of boys and girls to these trees they saw at once that the trees were from some cause not thrifty, that they were declining. We walked into the orchard to study the causes that could produce just in this one circle, about fifty trees declining and dying, and to my surprise came at once upon the San Jose scale. Not a single inhabitant of that section dreamed or supposed for a moment that that pest was in their midst. Upon putting the microscope upon it to be absolutely certain, the word was sent home by these children to say to their parents that they had one of the most dangerous pests in their community that possibly could have reached them. The result was that within twenty-four hours an invitation was extended to hold a horticultural meeting near Germantown to discuss the question of the San Jose scale and every fruit grower of the town was present when that meeting was held, that he might know all that could be learned about it, a special entomologist having come to attend this meeting. It has since been known in many portions of New York State. One of my own neighbors within eight miles distant of me has it in his apple orchard, in his pear orchard, in his peach trees, on his plum trees, on his raspberries, and in fact it seems as though it attacks almost all kinds of trees and plants; so that it becomes of the utmost importance now that we study this Scale in its habits and in its possible control. It is so important that it seems to me it is within the function of the Government that it shall lend its aid—which I am certain it will—in the annihilation, if that be possible, of this Scale. One of the discouraging features of this whole subject is the questionable fact that perhaps it never can be annihilated when it once gets a foot-hold in a community. When we consider that one pair will become the progenitors of something like three billions in a single season you may understand the gigantic effort that must be made to annihilate an insect like that, one that spreads with such wonderful rapidity, one that multiplies to such a wonderful extent. You may at once understand that it is a pest that cannot be lightly dealt with in its extermination. There might be very much said in regard to its treatment but that subject, I think, is to come up again, and hence it will not be necessary for me to go into a detailed discussion of that Scale now. We have been trying to estimate the damage that comes to New York State from the insect pests that afflict our fruit trees and forest trees, our shrubbery, our green crops, and our live stock interests. During a very careful study made four years ago into the condition of agriculture in New York State, and the causes that were sending populations adrift from the rural districts to

the cities, this fact was elicited in this study of the causes which were making agriculture in New York State so discouraging: On application to the State Entomologist, Dr. Lintner, to give me a careful estimate of the annual losses which come to the territory of New York State from the insects, his reply was, after a very careful study of the subject, and from reports which had been made for several years previous, that the annual loss to the people of New York State from insect depredations alone were not less than $26,000,000 annually. Now, that is appalling. And is there any wonder that farmers and fruit growers become discouraged, and sometime perhaps abandon their holdings and go to the city, hoping there perhaps to meet the wants of life easier? Is it any wonder that there is a drifting away from the soil, when $26,000,000 annually, year after year, is the loss that comes to the cultivators of fruit and the cultivators of agricultural productions? That, it seems to me, is appalling; and there is no line of work that your Association can do so valuable to your people as to follow up now persistently this San Jose scale, and watch for the introduction of any other insect pest that may come here and cut down your profits in this most delightful work of fruit culture, if it were not for the damages which follow from this cause.

TREASURER'S REPORT, 1898-9.

RECEIPTS.

Balance on hand December 1, 1898		$784 96
Membership fees	$4,087 77	
Advertisements	636 67	
Samples, etc	19 60	
Bound volumes, etc	13 40	
Government grant	1,800 00	
		6,557 44
		$7,342 40

EXPENDITURES.

Canadian Horticulturist	$2,499 38	
Salary Secretary-Editor	1,200 00	
Commissions	673 93	
Plant distribution	560 68	
Illustrations	419 12	
Affiliated societies	247 65	
Printing and stationery	213 15	
Directors' expenses	206 57	
Bookkeeper	153 00	
Postage and telegrams	143 60	
Reporting	104 10	
Express and freight	76 75	
Committees and delegations	74 59	
Advertising	35 60	
Binding *Canadian Horticulturist*	29 64	
Collection and interest	27 30	
Auditing	21 00	
Miscellaneous	10 50	
Books	7 33	
Caretaker at annual meeting	3 00	
		$6,706 89
Balance on hand December 1, 1899		635 51
		$7,342 40

Upon motion of Mr. A. H. PETTIT, seconded by Mr. E. D. SMITH, the report was adopted.

A. H. PETTIT moved, seconded by Mr. PATTISON, that the minutes of the annual meeting be taken as if read, they having been printed in the Annual Report. Carried.

ELECTION OF OFFICERS.

The election of officers was then proceeded with, and resulted as given on page 4.

REPORT OF FRUIT EXHIBIT COMMITTEE.

Your committee on Fruit Exhibits begs to make the following report:—

The exhibition of fruits made this year is above the average, both in size and quality, notwithstanding the light crop. It is gratifying to the committee to find that so many of the members of the Association took the trouble this year to bring some samples. It is inconvenient for members to bring large exhibits from long distances, but it is very little trouble to bring a small collection of those varieties which will be of greatest interest.

Mr. W. M. Orr, Fruitland, Ont.: Exhibited three varieties of pears, two seedling apples, and two plates of fine Vergennes grapes. The seedling apples were not of special merit.

E. Morris, Welland, Ont.: Plate of fine specimens of the Horn apple, said to be a very late keeper.

E. Lick, Oshawa, Ont.: Fine specimens of Fallawater and Cranberry Pippin apples, and another variety.

Jos. White, Whitby, Ont.: Plate of Ontario apples.

R. L. Huggard, Whitby, Ont.: A large collection of apples and pears. Among the newer apples being Bismarck and Salome. His samples of Salome were particularly good.

A. M. Ross, Whitby, Ont.: Plate of quinces grown at Whitby, which were of fair quality.

W. H. Dempsey, Trenton, Ont.: Collection of 19 varieties of apples, many of which had not hitherto been exhibited before this society. Among those shown were:—Jefferies, Mammoth Black Twig, York Imperial, Windsor Chief, Parlin's Beauty, Maclean, Winter Banana, La Rochelle, Boiken, Duffy's Seedling, Pioneer, Rome Beauty, Beaton Co. Beauty, and Trenton. Among those worthy of special mention were: Maclean,—A yellow, medium sized apple, mild subacid, very tender flesh, pleasant flavour. Winter Banana,—A large yellow apple with a pink blush, very tender flesh, mild subacid, high flavour. Duffy's Seedling,—A Californian seedling above medium size, bright red, conical, subacid, medium quality, a very attractive apple; season probably March. York Imperial,—A red winter apple which will probably be grown more in Canada in the future.

Central Experimental Farm, Ottawa: Twenty-one varieties of apples were exhibited. Gano, Patten's Greening, Shiawassee Beauty, and Milwaukee, were varieties shown which are succeeding well at Ottawa but are not yet very generally known.

Charles Young, Richard's Landing, Ont.: An apple for name. This is probably a Russian sort called Grandmother.

Harold Jones, Maitland, Ont.: Some fine specimens of the Scarlet Pippin apple. This is a very fine looking apple of good quality which Mr. Jones says brings a better price than Fameuse.

G. C. Caston, Craighurst, Ont.: Specimens of Gano and Boiken apples.

Burlington Horticultural Society: Plate of Baldwins.

W. M. Robson, Lindsay, Ont.: Sent specimens of McIntosh Red and an apple for name which was found to be King.

C. W. Smith, Whitby, Ont.: A very fine plate of Northern Spy apples.

Smith & Reid, St. Catharines, Ont.: Good specimens of Princess Louise apples, also three varieties of pears.

R. W. Shepherd, Como, P.Q.: Some fine specimens of Winter St. Lawrence apple.

Mr. Carpenter, Winona, Ont.: Two bushels of apples, one from the top of a barrel, and one from the middle. The difference was very marked.

Some other fruits were placed on the table after the committee had finished its work, and opportunity was not afforded to include them here. Some specimens also were not labelled.

W. T. MACOUN, (Chairman).
E. MORRIS,
W. H. DEMPSEY,
C. W. VAN DUZER.

REPORT OF COMMITTEE ON OCEAN AND RAILWAY TRANSPORTATION OF FRUIT.

Mr. W. H. BUNTING, speaking on behalf of the Committee said: There are two sections of this matter that are important to us as fruit growers—the question of service and the question of rates. As I understand it, this Association for the last thirty years has been making efforts largely devoted to the improvement and cultivation of fruits—efforts to provide for this country a finer class of fruits, and more abundant. During the past few years the results of the efforts of this Association and of individuals have been very apparent. There is no doubt that we have succeeded as a class in producing an abundance of good fruits, and each year the output is rapidly increasing. The time has come when better distribution of the products of our soil and orchards and vineyards is very necessary. The claim is made sometimes that we are producing more fruit than the country will take. It may be possible that in some lines we have been doing so; but in looking the question fully in the face it has impressed itself upon my mind that we are not at the present time producing, except in seasons of occasional glut, very much more than we require; but that it is the difficulty in presenting to the consumers of our country and of the home land the products of our farms and of our orchards in a good condition and quickly that has occasioned the trouble in connection with this. It is a deplorable fact that during the past few years, particularly in 1896 and 1897 in the Niagara District, from which I come, that a large proportion of our fine crop of peaches and apples in those two years was allowed to go entirely to waste, and the business for the time being was in a completely demoralized condition. Now, this is lamentable, and in spite of the fact that there are sections of our country that even during those years stated time and again that they did not receive the quantities of fruit that they could have used to advantage. In connection with the two phases of this question—that of service and that of rates—it is very apparent that we need relief, and we need improvement in both lines. The question of rates largely depends upon the individual transportation companies. Each company has a free hand to improve their service in whatever way they see fit. When it comes to the question of the reduction of rates or more favorable rates for the grower, that is a question in which all the transportation companies are interested; and as far as the railway companies are concerned, no single railway company is in a position to make a rate that would be detrimental or would not be concurred in by the other roads. So when we come to that question we have not only to meet one company but all, and we have to satisfy them that the claims that we present are reasonable and just and should be considered. I may say that we have not at the present time the facilities in the shape of service that we should have. While some little effort has been made to supply during the season refrigator cars for the better transportation of our more perishable fruits by freight, yet we have not received from the railroads the consideration that we should have received in that respect. We require a full equipment of suitable ventilated cars for certain classes of our products, and we also require a good refrigator service during the hot months of the summer for the proper distribution of our fruits

throughout the country. There is this difficulty with which we have to contend and one that is pretty hard for us as a class to get over. We will be met time and again, in asking for better accommodation, with the reply and the objection that our trade is not regular—that we are not in a position in the early spring to guarantee to any transportation company a certain output, and consequently our wants being irregular, and being dependent on the season, they are not willing or it is no object to them to provide in advance a sufficient equipment that may possibly not be needed during the season. Now, we cannot get over that altogether; but as a class in the various sections of our country, by co-operation and by planning during the earlier seasons, and planning one year for the future, we can, it seems to me get into a position whereby we can offer some reasonable guarantee to the railway people that if they provide suitable accommodation that accommodation will be utilized. I may say at St. Catharines during the past two years something of that kind has been in course of organization. We have been endeavoring to co-operate and to consolidate our shipments as far as we possibly could, and by so doing to offer to the railway people there a sufficient quantity of goods at a time that would justify them in supplying us with suitable accommodation and in making an effort to give us a service that would be satisfactory. Now we can increase that, and as our acreage and output increases year after year that objection will be less and less; but it certainly is at the present time one that is quite serious. The same thing applies to the ocean service. We will be met time and again with the reply from the steamship companies, "Your trade is so intermittent and so uncertain that it does not justify us in going to any large expense in providing for it;" and part of the season of the year when we require accommodation all other classes of people are clamoring for the same thing. The only solution of that point is, as I said, the various sections co-operating, the growers having mutual confidence in each other and endeavoring to assist each other in providing for the transportation companies a sufficient quantity from time to time that will make it worth their while to cater to our wishes. In connection with the question of rates, I may say that at the last annual meeting of this Association a committee was appointed to confer with the transportation people in an effort to secure better rates. That committee was quite a large one, consisting of Mr. E. D. Smith, Mr. Carpenter, Mr. A. H. Pettit, Mr. Murray Pettit, Mr. Orr, the Vice-President, Mr. McNeill, of Walkerville, and myself. We had several meetings, discussed the question fully, and then having done so met with the Traffic Association at Toronto, presented our views before them, asking for certain reductions in the freight charges. We did so on the ground that the fruit industry had never yet received any reduction in freight charges, and that owing to the largely increased output of fruit, that fruit at the present time was deserving of some consideration from the railway people, particularly in view of the fact that there was scarcely another industry that had not in some way or another been recognized by the railway people and had received some concessions. We presented before that committee a series of requests, which I may just as well read at this juncture. Having gone over the classification of freights we found that fresh fruit was classed at the first class in carload lots; that there was no classification for fruits in cases or boxes for export whatever, but that if they were shipped in that way they must necessarily go under the first class; that grapes that had been shipped for wine purposes—that had been originally under the fifth class—had been restored to the third class; and that apples in barrels for shipment in Canada were at fifth class at that time. Looking over these particular items we felt that in connection with these various points we had reasonable grounds for asking for concessions, and consequently we asked that these particular lines of fruits be reduced materially in the classification. I may say that the Traffic Association took that matter into some little consideration, and for the present we were unable to bring pressure

enough to bear upon them to succeed in getting them to give us the concessions that we asked for, and that we considered reasonable and just. However, they made a concession that from that time grapes only should be reduced one grade in the classification. Now, that concession would amount to from $10 to $12 per acre on every acre of grapes that went out of the Niagara District and the Essex District, on the basis of the Montreal rates. That is the amount of the concession we have got up to the present time. Having received that information from the Traffic Association, we applied to them again to have that concession applied to mixed fruits, no matter what they might be, not to grapes only. Up to the present time we have not succeeded in having the railway people agree to that point. I feel that in connection with this matter of transportation and rates we are but on the threshold; that the prospects of improvement are very bright in both ways; and not only that we feel we have a just claim, but that the attitude of a good many of the railway people is in our favor, for there may be opposition from those who may be more particularly interested. Still it has been stated to me by our railway people that they consider our claims were just, and that the railway requires only a little more determination on our part, probably a little stronger pushing of the matter to the front.

Mr. HUGGARD: Did the committee discuss the question of local rates from the separate points on the railway? For instance, the Hamilton and Grimsby people have facilities that the people of Whitby do not. That is to say in smaller quantities than a car load, you can ship cheaper from Hamilton to Montreal than we can from Whitby. This is a very important matter to us along this line. I quite agree with the sentiments expressed. As it presents itself to us here, it seems that the rates are greater from here to Montreal—so much greater than from Burlington and those points, that pressure should be brought on the railway people to equalize it in some way. As a matter of fact, this last season California grapes were landed in Montreal at something of a less rate from Chicago than they were from Toronto; and this should be brought to the notice of the Grand Trunk.

Mr. BUNTING: I may say in connection with the question of local rates, or less than carload shipments, that the railway people are very reluctant to interfere with the less carload rates in connection with our fruit shipments. They consider that less than carloads rightfully belong to the express companies, and do not wish to interfere in connection with that matter. That is the argument that is brought to bear. As far as concerns the rates being out of proportion on the shorter distance, I do not think we took that matter into consideration. I do not think we had any data given to us in connection with that matter, and it will be one for further investigation.

Mr. HUGGARD. I would like to ask, too, whether the committee investigated the charges that the express companies choose to put on us. It simply amounts to this, that when our goods land in Montreal, unless there is a pretty good market there the express company gets about the whole of it; and we want to stop this—we want a little share of it here. The rate from here to Montreal is simply ridiculous as compared with the freight rates on the Grand Trunk. As a matter of fact most of the fruit shipped from Whitby station this year went to Montreal, and in some cases took five or six days to get there, which is ridiculous too; and I think this ought to be discussed, especially with regard to perishable fruits.

Mr. CASTON: I will move the adoption of the report in order to bring it before the meeting. This is a very important subject, indeed. We all realize the difficulty this committee has to deal with, and we must not expect too much from them at once. It is a difficult matter to deal with a large corporation. It is a well-known fact in regard to the short haul that the situation is this; the long trunk lines are competing for through traffic, competing to such an extent

that the profits of through traffic are very small indeed, and they are making the dividends out of the local traffic and the short haul. That is the exact state of things in this country to-day; therefore this committee has a difficult matter to deal with in getting the reduction of local rates. But it has a great deal of work ahead of it, and I think that committee ought to be continued. There is not only the question of railway and express transportation, but I think this committee will be able to effect something better in the way of improved conditions for the ocean transportation for freight. It appears to me a shame and disgrace that so much of our fruit, even that which is well packed—leaving aside the question of fraudulent packing—arrives in the Old Country so-called "wasted" and "slack" and "wet." Now, we have a better route from this country than from any other, and if we can get the steamship companies to give us the temperature of the ocean air itself, our apples would carry perfectly well. Why should they deteriorate so much in the short space of say two weeks in their passage across the Atlantic? There is something seriously wrong there, and if this committee can do anything in that line they will be doing a great service to the fruit growers of this Province, because it is getting to be a very important part of our industry.

Mr. SCARFF seconded the motion to adopt the report.

A. H. PETTIT: The object of this committee was to get our goods classified differently. Whatever class our goods are shipped under, carries with it a certain rate. We were not dealing with local rates or with express companies, but with all the railways of the country for the shipment of fruits of all kinds, and to change the classification from No. 1 to No. 3, or No. 3 and No. 5 to a different class; and whatever class you get in, that carries the rate. The work of the committee was quite different from going and getting special rates for this locality or that locality to ship their goods. It is a rate that covers the whole business with the railroad companies, and all railroads.

E. D. SMITH: As a member of that committee, I with the others met in Toronto and discussed this question in all its bearings pretty well. It seems to me that for a number of years we are wasting ammunition in attempting or expecting to do very much in compelling the railway companies or steamship companies. We have been doing that ever since I have been in the fruit business. We went there with a very strong case decidedly, but as Mr. Bunting has said, all the railway companies are organized in an association called the General Traffic Association. You can not go to them individually and ask one to do something in order to get freight away from the other company. They are so combined and united that they practically have the situation right in their own hands. They have us in their power; and altl. ugh this committee secured a slight concession, it was just, as I looked at it, a little sop thrown to us to pacify us. It did not amount to very much. It was worth the effort, though, and it may be worth while to continue it, and urge them, and get little sops thrown occasionally to help us out; but I think we shall never with regard to railway rates secure our just rights any more than we have with regard to the accommodation on steamships so long as we depend entirely on an appeal to their generosity. Corporations, as is often said, have no souls. They look at it entirely as a matter of business. They have this trade in their hands, and we cannot help ourselves. We must take the rates that they offer to us. Now, there is only one way of getting what we want, and that is by compulsion. We want to look around and see what lever we can get hold of that will move them; for compulsion, as I have maintained for many years, is the only thing that will affect the railway or steamship companies; and the only compulsion that I know of is the Government of the country. We have heard a good deal for years about appointing a railway commission. It seems to me that is the only relief we can get from the railways. We should have a commission conducted at not too great an

expense, before whom we can lay our grievances, and who would have power to compel railway companies to make fair rates,—that is, fair to all parties,—and not charge fruit growers excessive rates because they are scattered and distributed, and have not got a pull or lever that some other industry has. This commission could compel to give fair rates to all parties, and reasonable rates taking into consideration the length of the haul. It has been said here to-day that the long haul pays the little profit, the short haul pays the big profit. You know gigantic efforts have been made in the United States to overcome that difficulty, and something has been done. Possibly by means of a railway commission something could be done here. A much greater grievance—though I understand you do not wish to discuss that now—is the ocean transportation. That is a matter of very much more importance even than the railway rates, and the only way to get at that is through the Government. Would it not be advisable for this meeting to point out the way in which this committee should act, and the lines on which they should go? It might interfere with the results we might achieve, if we were to attempt to take up the local rates from different local points.

Mr. CASTON: Of course there is this difference that Mr. Huggard did not take into account: Here there is only one railway, whereas the Hamilton people have the competition of two railways.

Mr. BOULTER (Picton): We have had experience in our Packers' Association of which I am President, We were handicapped in the exportation of our goods to the old country. At first very little was conceded, but we approached them and kept at them until we succeeded in getting the classification changed, which made the rate a little different. Do not give up. We did not. When we could not get our goods to Montreal by rail from the local points for the rate, we shipped by water, and got rates then from Montreal through. Put men on your committee who will take the time and work and interview this Traffic Association. We got our classification reduced, and we also gained on our local traffic. We got a rate to Vancouver or Victoria, also to Winnipeg, the same from all parts of Canada—the same from, Montreal, Toronto, Picton or any other point. Now, I would not give up trying to get better rates. It is rates that guide and govern the success of the men in any business in which the old country is the market. I would like to see an efficient committee hammering away on that business; but the whole point in getting a good rate is getting a good price at the start.

The motion to receive and adopt the report was then put and carried.

The SECRETARY: I would move the continuance of the committee for the new year, Messrs. Bunting, Pettit, Smith and Carpenter, and that they have power to deal with both ocean and railway transportation. It will be interesting for you just now to hear the resolution agreed upon regarding the former, a copy of which was forwarded to the Dominion Minister of Agriculture.

"Whereas, the accommodation on Atlantic steamships has hitherto been unsuitable to the carriage of our fruits, even such hard fruits as apples being ruined in transit and arriving in the British market in an unsalable condition, although in perfectly sound condition when packed and shipped, and

"Whereas, the lack of ventilation, and the great heat in the holds of the vessels, added to the heat arising from the fruit itself, contributes to this evil, which has resulted in immense losses to the fruit growers in every Province of our Dominion.

"Therefore, resolved, that we memorialize the Department of Agriculture at Ottawa to take steps to remedy this serious condition of affairs, and thus give encouragement to one of the most important branches of industry, and that inspectors be placed at the more important ports, as Montreal, St John and Halifax, whose duty it shall be to see that such ventilation is attended to, and, further, to insist upon proper care in handling, loading and storing of our fruits on shipboard.

"Further, that, when cold storage for fruit is provided on shipboard, the steamship companies shall be required to guarantee that the temperature will be kept within certain limits, and that the same be verified by a self-registering thermometer placed under government seal."

Mr. CASTON: I second that motion. We have overlooked our very important home markets. We have a large market in the Northwest, and there is the question of transportation there—whether we should use ventilated cars or ice cars

to see that there are proper facilities for re-icing those cars and delivering the freight in proper condition. There are great complaints coming from Winnipeg, Portage la Prairie and those western cities as to the manner in which fruits arrive from Ontario. That is a question that would come within the purview of this Committee as well.

The motion to re-appoint the Committee was carried,

COMMERCE IN LARGE FRUITS.

Prof. J. W. ROBERTSON, of Ottawa, said: Mr. President and Gentlemen: I regret very much that other public duties kept me from being here to profit by the discussion that has taken place on the transportation of fruits. Transportation is a very important part of commerce, but not by any means the most important part of the commerce of fruits in Canada. If I may say one or two words in regard to commerce in general I think you will be in a better position to understand what I would like to indicate; and be better able to learn from you what our department needs to know from the men who are practically engaged in this business. Commerce is the exchange of things—of commodities. It is not a mysterious philosophy. It is the exchange of commodities—something for something. That is not stock-broking, and is not speculating in shares. These phases of business operations may be right or wrong, but they are not commerce. Commerce is essentially the exchanging of commodities. One of the essentials for success in commerce is to have a commodity to exchange which in itself will get you a relatively large value because it is in good demand or in other words because many people want it.

In making the exchange, transportation comes in; and the better the transportation the more easily can the exchange be effected; but it does not necessarily affect the *essential quality* of the commodity you have to offer or of the money you may get for it. Unless the two—the commodity and the money—are good at both ends, safe commerce is impossible. I need not discuss safe money, because we have in the British Empire no question of the soundness of pound or the dollar. (Applause). The question is to get enough of them. (Laughter).

Fruit-growing in Canada has been adopted by a great many people who have not taken any trouble to learn how to carry it on. One has merely to look at the fruit trees that dot the face of the country to see that that is the case. It is shown by their kind, and their condition, and their general behaviour. There are some orchards that denote skill on the part of the man who manages the orchard; but for each such orchard I think there are ten orchards which are left to take care of themselves. The powers of nature take some care that the tree will be hardy and have some kind of fruit that will have seeds to reproduce it. The fruit-grower is after another object. He is after fine fruit to sell for a good price. The fruit-growers have been chiefly growing the varieties of fruit that grow easiest. Those may promise them a chance to hit any kind of market at any time of the year. We have too many men who have "loaded" their orchards to hit anything in general, but no market in particular, therefore they don't hit any market in particular.

We need to have a few sorts and varieties of large fruits, and these in reasonably large quantities in each locality, else the general commerce in large fruits cannot make progress. Let me give you an illustration of that. We find Canadian markets during most of the fruit season filled with fruit from the United States. That's the fact. Why is it so, when we in Canada say we have more fruit than we can take care of, and are looking for outside markets—

outside markets, with the very same sorts of fruit? The United States fruit that comes here has a uniformily good appearance throughout the package. That is worth a great deal. I talk to my friends in Ottawa, "Why do you buy those Californian fruits?" "Well, the fruit in the case is all the same." I say to the shopkeeper, "Why do you buy these?" "Well, I have no wasty ones in them; they're all alike." These two specific reasons, you see, are at the very threshold of commerce—are put there by the men who have the money to give in exchange. I mean the shopkeeper and the consumer. The Californian fruits have good keeping qualities. We may think that our climate and soil give a far better flavor, and I think they do in nearly all sorts of fruits; but the consumer says, "I want good-looking sound fruit, that is fairly uniform all through the case."

I come next to deal with the personal, particular market. There is such a market in every town in Canada, which the fruit-growers around these towns should be able to supply. The commerce of the locality is worth looking after. It is far better worth looking after than the commerce in the foreign markets. Every town in Canada would consume twice as much Canadian fruit if the people could get Canadian fruit of uniformly good size and good quality—not at a lower price; that is not the point. They are able and willing to pay a higher price than they have been paying. The question is one of fine quality throughout the whole package, with every fruit in good condition. The home, the house market will take all kinds of fancy, large fine fruits at double the price of the general market for export. I am talking of the town I live in and other towns. Why not meet that great unsatisfied market, and grow especially for it. That is where the money is made mainly.

Then there is the general home market—I mean the market that is like our wheat market, the general market for the general good quality. The market of the North-west and Manitoba is a large market and a growing market for Canadian large fruits; but if any of you went to Manitoba and tried to reason with a Winnipeg man as to the desirability of taking Ontario fruit instead of United States fruit, he would smile and tell you he knew his business, and that you didn't; that he had tried Ontario fruit many times and that there was so much loss and waste that he could not stand the risk, and he wasn't going to try it again. I don't know whether what they say is all correct, but they are the men who have the money. They are unwilling to exchange what they have for what we want to give them, and that is what they say. I have personal letters from men in the North-west, and they say, "We bought a barrel of Canadian apples, and the top looked nice, but the inside wasn't the same." That is what they say. (Laughter). I don't know how it comes about that the small, inferior apples gather in the middle of the barrel. I have never been able to account for it except in the light of a paper read at your annual meeting in St. Catharines which explained it admirably and completely. The fruit-grower assured us that ever since Eden the devil personally inhabited each individual apple, and then moved his habitation about after he got in the barrel. (Laughter). I don't know any other way of accounting for it.

I want to get your minds on the line of our greatest need for improvement. I have been hinting at these things—a uniformly good fruit all alike throughout the package; uniformly sound condition, with good-keeping qualities for the shopkeeper and the consumer; and then excellent superior quality for those people who are willing to pay extra for such. For the general export market we need similar improvement. Every mail that comes from England brings me word like this: "What we want in Canadian fruits first of all is soundness and good-keeping qualities, and nearly uniform size throughout the package." That is what they want. Then they want also a nice appearance—as large a size and as fine a color and as good a shape as can be had. After that they want fine flavor. I have

letters here saying that the Keiffer pears were taking better in the market last year than before. Now, who is going to stand up and brag about the Keiffer pear for quality or flavor or flesh? But for sound-keeping quality they are quite the thing; and that is what the commercial men who have the money say about that pear—that it is taking better this year than it did the year before, and there is a reasonably good prospect for it. If we can get an equally good-keeping pear and equally good-looking pear, or a better-looking pear, with superior qualities of flavor and flesh, that is the one to send. I mention the Keiffer just to show that they are after these things first—soundness and good-keeping quality.

The Department of Agriculture made trial shipments this year. I shall make a few brief observations on them. These were trial shipments mainly of pears, of peaches, and the more tender sorts of apples. We sent altogether only 127 cases of peaches, 3,746 cases of pears, 1,456 cases of apples and 82 cases of quinces. The main shipments were pears and tender varieties of apples. The peaches were packed in cotton batting, so as to protect them against any possibility of bruising, and also against the warm, damp air of England when they were taken out of cold storage. Here are the returns,—not very good in some cases. We sent not more than 30 cases at one time, except in one late shipment. Twenty-eight cases were sold for $2.46 each, and realized at Grimsby net, after all expenses were off, $1.68 per case. These were specially selected peaches. I find I have not got here the exact weight of the peaches; perhaps Mr. Pettit can tell me.

Mr. PETTIT: I don't think I could tell you the weight. There were 64 peaches in each case.

Prof. ROBERTSON: The weight would be not more than 15 pounds of peaches?

Mr. PETTIT: Somewhere there.

Prof. ROBERTSON: The next lot of peaches, 30 cases, sold for $2.99 each, and netted at Grimsby $2.31 after all expenses and commission were taken off. Then 53 cases were sold at $1.46, and netted 92 cts. at Grimsby. I will read you an extract from only one letter in regard to that. This is from the consignee in Covent Garden: "You will notice the good prices we made of peaches"—that was that second lot. "We must say that whoever packed those did his work well. They arrived in splendid condition, and have of course met with good results. We think the Elberta peach is the finest, and ought to do well in this market." We have not had much success in a general way in shipping Crawford peaches yet. That shows there is an opportunity in England now for peaches—for small quantities—if put up in such a way as to be carried safely and to have an attractive appearance when they are delivered.

Then in regard to the trial shipments of pears. The returns from the pears vary very much, partly owing to the size of the pears and partly owing to the condition of the pears as to ripeness. Some pears were landed a little too ripe, "dozy"; and then later shipments of pears were landed too green. With some, we hit it just right. We had some that were landed just right, some that were landed too ripe, and some too green. Pears should be picked when the pips are about to turn brown. In the case of the very early and tender pears, they should be picked *just before the pips turn brown.* If the late pears are packed in that condition they don't ripen on the way, and when the English buyer cuts the pear down and looks at that part, if the pips are white, unless the pears are very fine he does not want them. If the pips are too brown he says they are going toward decay, and they go into the hands of the jobbers. A very early and tender pear should be picked at an earlier stage of ripeness than the later pears which don't ripen so quickly. We all know that as a principle, but we have forgotton to put it in practice in the actual management of the shipping business. Here are the figures of one of the early lots; 55 pkgs. pears from Mr. Woolverton were sold for 86.4 cts. and netted 50 cts. at Grimsby. The packages held about 16 or 18 pounds; the large ones a little more than that. The

report to me from Manchester was that that was the actual weight of the pears. 95 pkgs. from Mr. Van Duzer were sold at 93.7 cts. netting 52.6 cts.; and 145 pkgs., specially good, were sold in Manchester for $1.97 and netted in Grimsby $1.54 per case after all expenses were off.

Mr. PETTIT: What kind were those?

Mr. VAN DUZER: Bartletts.

Prof. ROBERTSON: The fruit shipped by J. D. McKinnon & Sons sold as follows: First lot, 74 pkgs., were sold at $1.07 in London, and netted 65 cts. in Grimsby; second lot, 77 pkgs., were sold at $1.21 in Manchester, and netted 82.2 cts. in Grimsby; third lot, 65 pkgs., were sold at $1.19 in Bristol, and netted 71.1 cts. in Grimsby; fourth lot, 60 pkgs., were sold at $1.23 in London, and netted 64.7 cts. in Grimsby; fifth lot, 11 pkgs., were sold at $1.90 in London, and netted $1.34 in Grimsby; sixth lot, 32 pkgs., were sold at $1.07 in London, and netted 64 cts. in Grimsby.

These differences seem inexplicable, but the correspondence and my reports from Grimsby and from our own agent in London, indicated that every time when the pears were superior in quality, in size, and just right in condition, they fetched extreme prices and there was a great demand for them; whereas when the pears were small in size or not in good condition they struck a poor market. If you read the correspondence you would see the reason for the extreme differences in price in the same markets for fruit from the same shippers. Here are the returns from A. H. Pettit & Son: First lot, 6 pkgs., were sold at $1.59 in London, and netted $1.14 in Grimsby; second lot, 5 pkgs., were sold at $1.22 in Manchester, and netted 83 cts. in Grimsby; third lot, 15 pkgs., were sold at $1.21 in Bristol, and netted 72.6 cts. in Grimsby; fourth lot, 80 pkgs., were sold at $1.14 in London, and netted 55.5 cts. in Grimsby; fifth lot, 242 pkgs., were sold at $1.97 in London, and netted $1.40 in Grimsby; sixth lot, 132 pkgs., were sold at $1.60 in London, and netted $1.14 in Grimsby. The larger the lots the better they sell. If I were to quote you all the large lots only I would give you the best prices in every market. I mean, an appreciable quantity will fetch higher prices than five or six cases of a sort. All you want at this meeting are instances giving general information.

I want to read a few letters in that connection. This is from the consignee in Covent Garden, London, in regard to the size of the pears:—"We notice that most of your fruit is small. Now small fruit on this market does not sell well. It must be large, bold, clear stuff. That is the reason of the success of California pears." Now, that is the same firm that sold pears of ours later on at good prices when we sent them what they wanted. "We think the size of pears you send should be no smaller than 60 or 62 in a case. When you get them up to 100 and 122 in a case, that is very small." I would like to read you one other brief reference from *The North of England Fruit Brokers, Limited*, of Manchester:—"The quality of those you sent was most excellent, especially the Clapp's Favorite, but there will have to be great improvement in the cold storage arrangements for transit, and much more care exercised to make the temperature suit the fruit, maintaining the same degree all through the voyage. If they could only be put in this market in the same condition in which they are put on your markets good business will be done." That is in regard to the first shipment. Later reports say even from their standpoint the cold storage was all right. The fault was not in the cold storage; it was in Montreal in this case, where the first shipment missed the steamer and then had to be held over for the next steamer. It was the holding of them that caused that over-ripeness. Then from W. N. White & Co., of Covent Garden:—'The Duchess pears have also done well. These hardy sorts of pears are sure to do well. There is not the same danger in shipping. As regards what you term French pears, there is no use sending them again here. They are what we call Bonne Terre and should come much later in the year. I

cut one in two and saw that the seeds had not turned black, showing that the seeds were not properly matured." Then also from the same firm :—"From experience we find that the pear is only fit for pulling when the seed is just turning black. If it is picked when the seed is white there is no keeping quality in the pear. Care must also be taken not to pick it over-ripe. The seed must be just on the turn." These are large handlers of Canadian and French and Californian fruit. One thing more from the same firm, enclosing a cheque for the proceeds :—"We have already cabled you the net results and also the prices realized for the Duchess pears. These did very well indeed, and large clear fruit will always do well. The Keiffer pears were also in good demand, but the peaches, with the exception of Elberta peach, are not much of a success. They seem to eat very harsh, and there is not much juice in them. The Elberta is much the better peach." Then a letter in reference to the last shipment :—"We have already written you our views on these pears, and think if next year regular supplies are kept up they will do well, especially the Duchess pears. The Keiffer pears will also do well on being better known." (Laughter). I am not offering you any casual opinion of my own ; I am offering you the judgment of the firm that has been sending us the money for that fruit—the exchange we want. Now if they are willing to exchange good English gold for Keiffer pears, let us give them enough to get a good exchange.

I have only a little to say about apples. We sent over altogether 1456 packages. They were all landed in good condition. Nearly all pleased well, but there was a common complaint that the packages were much too small. The Department was willing to let the shippers have their own way, and I also, with the shippers, was willing to make trial whether we could send fancy apples in small packages and make a good trade of it—I mean packages so small that they were about from 14 to 16 lbs. net of apples in each. We found these too small. They netted some fair prices considering the size ; but still they did not pay. Taking off the expenses, which were very heavy, these small packages netted anywhere from 5 or 6 cents up to 21 and 25 and 30 cents, which after all is a good price for 15 lbs. of apples. A forty or fifty pound case is the case that they want as a minimum for fancy apples. We sent some half bushel and some bushel cases. Here is one report :—"Apples. Speaking generally we beg to say that in our judgment these boxes are much too small for apples. We think apples should never be put at this time of the year in boxes containing less than 40 lbs. That is still a small package. For the last six weeks very large quantities of English eating apples have come in our market and been sold at an average of six shillings per hundred weight, which were quite as good a quality and better condition than the shipped ones. Our English apples have not the colour that yours have, but we are inclined to think that the expense of wrapping them in paper and putting them in small packages, as was done in this case, is at this time of year inadvisable." The same people wrote me later,—a letter which I received only yesterday. It is not confidential, therefore I use the names. "By the ss. Manchester Trader we received from Messrs. Pettit & Son, and Mr. Andrewes, of Grimsby, Ont., consignments of apples in boxes of about 45 to 50 lbs. gross. The quality and size were really good, and such will always command good prices. We have written Messrs. Pettit and Andrewes advising them to send all they can if they can ship the same quality and size, as we feel sure they will do well. We should be pleased if you would advise any of your shippers if they hold this A1 stock to ship it here, packed in 40 lbs. net boxes, and the apples wrapped in tissue paper. It is no use sending small or medium sized fruit, as there is plenty of this kind on the market." Those apples, looking down the sales, sold from seven shillings, and in fact one lot of seven cases as high as nine shillings—from nine shillings down to 4s. 9d. per case for everything except the samples. Those are substantial good prices for 40 lbs. of apples.

Mr. CASTON: What would they net at Grimsby?

Prof. ROBERTSON: At the same rate of expense as the shipments made by the Department, a package that size would cost about 40c. for transportation and selling expenses. The freight charges varied according to the rates that prevailed on the ocean, and also as to whether a full carload or not was sent. If they sold for 7 shillings with 40c. to come off, they would net about $1,28 per box.

Mr. CASTON: That is about a third of a barrel, that 40 lbs. of apples?

E. D. SMITH: A little less.

Prof. ROBERTSON: I should think those apples would net about $1.25 a box at Grimsby,—perhaps a little better. That particularly fancy apples in fancy cases will fetch a fine price goes without saying. I have a letter here from London dated November 22nd., and Mr. R. W. Sheppard is also in the hall and he will let me give away, I know, some of the information about his business that came to me through another channel. This is what happened. I wanted to have three cases of very fancy apples sent to some friends in London, and I did not get word of that until all our shipments from Grimsby had been sent forward and disposed of. I wrote our agent to get three cases of fancy apples in London as cheap as he could and as good as he could, and send them with the compliments of the Canadian friend to these people. He wrote me,—"Sheppard's consignment of Fameuse apples arrived only yesterday. I had three cases sent as directed. I have written to each of the parties to whom the fruit was sent. The fruit is very fine, and so is the price, which was 21 shillings per case, and 1s. 6d. each case for carriage. The apples are retailed at 1s. 8d. per dozen." That is quite a price. This letter says 21 shillings a case, and it is rather a favour to get them from one of the largest concerns in London, that has an almost unlimited demand. The case I suppose holds about a bushel.

Mr. SHEPPARD: A little more; 196 apples.

Prof. ROBERTSON: This same letter says:—"On last Monday I called on several large firms in Bristol and saw a lot of Canadian apples, and I felt ashamed of my country. They were slack, wet, not well graded, dishonestly packed, many barrels being topped with good fruit, filled with perfect rubbish of many varieties. I counted 25 varieties on the bill of lading to a consignment of about 100 barrels. Some of the barrels have more than one variety in. The Elder, Dempster people were offering Fameuse apples"—(those were Fameuse that we paid 21 shillings a box for)—"were offering Fameuse apples for six shillings a barrel, and could not get even that price—large barrels." Compare that with Sheppard's 21 shillings for the box holding a little over a bushel! Now I need not say anything further to emphasize the value of selection and quality and condition and packing and package for getting a big price and an almost unlimited demand.

Mr. President, I now put all these account sales and things to one side. I have not given you a great deal of detailed information. I have given you, perhaps, what is better; I have given you impressions as to what the conditions are and what the possibilities are in regard to tender fruits. Each man must work out the methods for himself in his own locality. I now pass on to mention further what I think are improvements required for and in the commerce in large fruits. First of all, for the export trade there must be comparatively large lots of one sort and of one variety—not too many varieties in a single consignment. Then there must be fine quality and fine condition. The apples, specially, must be large and uniform and sound. Nature does not provide them of that sort on the trees. They are not uniformly large, and they are not uniformly fine in appearance, and they are not uniformly sound; but it will pay the shipper to send to the English market only those that are, and do something else with the others. There would be more money come into the country by sending out only the uniformly good fruit. (Hear, hear.) The fruit must be fine in regard to

flavor, if we are to please and keep the trade permanently. There are one or two ways for the apple trade to gain that end. One of these is that the orchards shall be so large in their production that the individual grower can meet these conditions himself, by having reasonably large quantities of each good variety he ships. If the grower of the fruit be not in a position to do that, then there must be a central packing and shipping place for the locality. I don't see any other means of putting this trade on a basis that will make it profitable commercially. Our cheese trade, which is bragged of a good deal, and perhaps deservedly so, will bring in something over $19,000,000 this year. That is a reasonably large sum, and has grown from under $6,000,000 within my recollection and active connection with it. That has been possible only by the trade being on this basis: the production of uniform quality at the factories, and then the handling of that by competent commercial firms that select carefully and send only to each market what suits it. When Canadian cheese is quoted at a price, it is bought on this side and the money practically sent here for it; it is not consigned, as a rule. The possibility of that begins when the quality is of a standard sort, and is uniform throughout each lot; otherwise the men on the other side will not buy; they will compel consignments, and consignments of irregular, inferior goods spell ruin. Now, our butter trade is getting on as good a basis as our cheese trade. In 1894—that is not long ago—the exports of butter from Canada were worth about $600,000; and this year, because of more systematic manufacture and safe transportation, the exports will rise to probably $5,000,000. I think they will increase $2,000,000 further next year. That seemed impossible four years ago, when people said: "Oh, you have no business sense, or you would not talk of those possible increases." If you put the business on a safe commercial basis in regard to the production and the selection, and the handling and transportation, the English market will give you any amount of money for the right quality of food products. I mean they have the market and they have the money. I merely instance what has been achieved in those two products by these methods.

The transportation on the ocean has not been of the best yet for either apples or tender fruits. It has been gradually getting better than it was. And now for the tender fruits. This is in contemplation for the next season: Instead of having large cold storage chambers—which were all we were able to provide for three years ago, because the steamship owners then would hardly do anything, thinking the business was not worth encouraging—we will be able to arrange for small cold storage chambers of from one to four carload sizes, so that tender fruits can go in a chamber by themselves and be treated as they ought to be, instead of going in as a side accommodation in a butter chamber. But we could not get as far on as that until this year. Now the Minister of Agriculture has arranged for small cold storage chambers on the ships, in which the temperature can be kept from freezing point or below freezing point up to any temperature required. The steamship companies say they will provide ventilated holds for apples. But providing these facilities does not ensure that the fruit will get the benefit of them; and there's the rub. There is no blinking that. I listened last year with a good deal of interest to the discussion which resulted in the appointment of a Transportation Committee of this Association. There are cold storage cars on the railways, and there is plenty of ice in the ice-houses along the lines, and there are cold storage chambers on steamships; but these things don't act themselves—(laughter); they don't bring about anything. All the Government can do, I think, in the matter, in the commerce of things, is to help to provide the facilities, and then the man who has the stuff in his care and at his risk may put the agencies into operation. Take the cold storage in railway cars for butter. It took three years to educate everybody—the railway agents and the men in Montreal, and other men. Cold storage is a business that requires trained men to mind all the

little things about it. And now the individual fruit grower must look after his own fruit as long as he has any risk in it, no matter what conveniences or facilities the Government provides, because the carelessness of those who handle it may prevent the facilities from being useful to the man who ships.

The unfortunate position of the apple trade is due to one of two causes, and even to both causes combined—not only bad transportation and not only bad packing, but sometimes bad packing and poor transportation combined to do the greatest possible damage to the business. One of the main causes of loss, however, is the want of skill in packing apples. I suppose everybody is born with ability to do a great many goods things. I know most men are born with a consciousness that they are able to judge horses and make good speeches and run for parliament—(laughter)—only sometimes they don't get the chance. I hope no fruit grower will believe that he is born with the ability to pack apples by intuition. It is a business that needs particular painstaking in the learning. I don't know yet how to pack apples. I have not packed many barrels myself—perhaps 20 or 30 with my own hands—but I have supervised the packing of a great many more, and I don't know how to pack apples. I don't how to make horse shoes ; I don't how to make doors. I haven't learned the business. Do you see? I want to lay down the proposition that a man doesn't know how to pack apples until he has learned the business of packing apples. You don't know it by intuition. You have to begin by learning a little, and then adding to the experience a little more, until you know how to pack apples. By that process we would have a lot of trained men and women and boys able to pack apples. Then there has been great want of care, as well as lack of skill. Then there has been want of honesty. That ugly word dishonesty will somehow thrust itself in before the man who is examining our apple trade. He says to himself, "I mustn't say that because I will offend a great many Canadians." I was told when I went before the Committee of the House of Commons a few years ago, "You mustn't say anything reflecting on the honesty of the fruit growers and farmers, because everybody will be down on you." That doesn't make any difference ; because much as I strove against having any such opinion, the evidence would keep coming up and keep coming up in the most irrepressible way that there is, somewhere and somehow and very often, simple dishonesty in the packing of the fruit. I cannot put it in clearer English, and I can't put it any stronger than by saying these few words. Is there any proof? I told you what we did last year. I would not even try to thrust the proof on the Convention if it was not in the hope of making some amendment. I think the most graceless and useless undertaking in the world is to go about finding fault unless one is finding fault on purpose, and with some ability, to make remedies.

Last year we had a great many fruit growers saying that the damage to apples was all done on the railways or on the steamships or in the markets of Britain ; and nobody seemed to know where the damage did take place. Last summer the Minister of Agriculture authorized me to engage two men to watch the condition of the apples, passing through the ports of Montreal and St. John, N.B., and Halifax, N.S. These men were not official inspectors—I mean they were not clothed with power to seize fruit—but they were Government employees to stay on the wharf and watch the loading of fruit in the ships, with instructions to pick out here and there average sample lots, examine some barrels and make me a report of what they found, with the name of the shipper and name of the consignee, with the number of barrels and the car numbers: Some of these particulars I am not going to give to this Convention. They were confidential to me as an officer of the Department.

The reports of the inspector at Montreal began on the 6th, September. He picked out carload lots and the following are extracts from his report on several lots. "Damp, and some barrels wet." That was in Montreal. Then on the

same day: "A good many No. 2 apples in this lot." That was another lot. Then on the same day, "Brand XXX 100"—I don't know if anybody here knows the brand—"some of the apples were very small." That is his report. Of course he found other lots: "Apples in good order and the weather cool." These were examined in Montreal before there was any chance of being damaged on the ship. In another report he wrote, "This lot is in good order, certainly small, but sound." And then, "packed loose." Then another lot, "badly spotted." Another lot, "badly spotted." Next, "loose packed." Then, "A. No. 1 fruit." Then the next lot, "Apples rotten and loose packed". Then the next lot, "Some poor and slack and loose packed." Next lot, "Fruit only fair." Next lot, "Fruit some spotted." Next lot, "Fruit A No. 1." Next lot, "Fruit A. No. 1 but small,"—and so on. I am giving you quotations from the reports on the lots that went on five steamships in those three days. I can do that now without any hesitation, because those apples have all been sold in England. These were apples shipped in September. Sept. 21, "Apples A. No. 1 in good barrels." Sept. 22, "Lot Blemheim Pippins rotten." Sept. 22, "A. No. 1, but fruit seemed a little on the small side." Sept. 26, "Fruit A. No. 1, barrels very poor." Sept. 27, "Rotten fruit in good barrels." Oct. 2, "Fruit A. No. 1, barrels very poor." A No. 1, good barrels and well packed." Oct. 4, "Apples, fruit small and spotted." "Fruit poor and bad barrels." "Fruit A No. 1, poor barrels." "Fruit rotten and poor." "Fruit only fair." "Fruit, Pippins A No. 1; Snows poor." Each one of these refers to a different carload. Oct. 9. "Fruit only fair." Oct. 10, "A No. 1 but small." "Fruit small but branded No. 2." "Fruit spotted and poor, also small." "A No. 1 fruit in poor barrels." "Badly spotted." "Badly spotted." "A No. 1 but small." "Next lot small but A No. 1." Oct. 16, "Rotten and others fair." "Fruit some spotted." "Fruit rotten, others fair." "Fruit rotten and wormy." "Fruit only fair." "Fruit only medium." "Fruit A No. 1 but too tightly packed." "Fruit No. 1 but barrels wet." "Fruit badly rotten." I am reading some of the worst ones.

E. D. SMITH: You are taking them as they run?

Prof. ROBERTSON: No, I am taking perhaps six out of twenty.

G. Y. Smith: Does it tell the kind of apples?

Prof. ROBERTSON: Yes. I am reading you the reports on from one quarter to one sixth of the whole number of carloads examined.

E. D. Smith: Taken indiscrimately?

Prof. ROBERTSON: Taking more of the poor ones. The inspector had no official power to disturb the fruit very much, so he did not disturb the barrels very much. He took a few apples off the barrel and looked down in them. Then, Oct. 23, I will read you the comment on each lot in this report straight through:—"Fruit all No. 1." "Fruit only medium." "Fruit A No. 1, good barrels." "Fruit A No. 1." "Fruit poor and rotten." "Fruit A No. 1." "Fruit very poor." "Fruit A No. 1, good barrels." "Fruit very poor." "Fruit poor stuff." "Fruit rotten trash." "Fruit A1." "Fruit A 1." "Fruit fair." "Fruit poor and bad barrels," "Fruit only fair." Fruit A No. 1, good barrels." That is the summary of all the carloads reported on that one sheet.

I will read you only two extracts from the inspector at St. John, N. B., and Halifax, N. S.,:—"The ventilation in most of the ships might be fairly good if only such care in looking after it could be secured as most people give to the preservation of their own property. Extreme roughness in the barrels, received in the unloading from the cars as well as in the stowing of the ships, cannot fail to injure the fruit—(Hear, hear)—and it seems to me under present conditions very difficult to control. In St. John the apples are unloaded from the schooners alongside the steamer, and fare rather better in that respect than in Halifax, where they are unloaded from cars and then rolled through the freight shed that in wet weather is often very dirty, and the barrels get blacked up very much. This, however, is easily remedied, but certainly somebody should have more

control of the rascals that smash and tumble the barrels at their sweet wills." (Hear, hear). "Then the loading of those steamers is done mostly at night off the railway. Barrels are rolled across the warehouse and loaded into the steamers outside. It is quite impossible in this rush to catch anything from the marks on the barrels." There is what you find, reported from intelligent, competent men, examining the fruit at our own ports before it leaves.

Now, it is not surprising that bad reports and bad sales come back from at least that class of fruit; and I have not picked on, and they did not pick on, any particular lots, but spent their time during September and October examining different lots—giving me a full report like that every week. There is something radically wrong, to allow so much waste and so very great loss, to go on in an important business like this.

I want to say a little now as to what the agent we had found on the English side. He also was an independent man, outside of commerce. This is in regard to apples. "Sept. 2,—A lot of Nova Scotia apples were sold to-day at from 15 to 17 shillings per bbl. and that in a market glutted with English apples of all kinds, including windfalls. I noticed barrels with a thick paper at each end, as I suggested in my report to you last spring. I noticed the barrels opened up with a much handsomer appearance than barrels without paper, which had a bruised, and in some cases a dark bruised appearance. Neglect of that little point caused shippers a loss of one shilling a barrel. The best Nova Scotian apples are far better than the Ontario boxed apples in every way." Nova Scotia apples are not sold as Canadian apples. As I pointed out to the Convention last year, in examining account sales the percentage of wasty and slacks in Nova Scotia apples was about six per cent., and the percentage in Ontario and Quebec —so-called Canadian apples—was something over sixty per cent.

A. H. PETTIT: What about the Nova Scotian barrel and the Ontario barrel, in the bilge?

Prof. ROBERTSON: They say the difference in the bilge of the barrel now is so slight that that cannot contribute much to the difference in the condition of the fruit.

Mr. CASTON: The Nova Scotia people are half way there; that is an advantage.

Prof. ROBERTSON: They have some advantage, and still they complain of the handling at St. John and Halifax, the rough handling; but the Nova Scotia orchards perhaps each produce a larger quantity of one variety than in Ontario. That is very important; and the Nova Scotia apples are nearly all handled by men trained to the apple business. Many of the London firms now have their own men and warehouses in Nova Scotia, and those that are not handled in that way are handled by large growers and men trained in the packing. These account for a great deal. I was speaking with a Nova Scotian grower the other day who for three successive years has done his own shipping from his own orchard, and his apples have averaged him in his orchard over $3.05 net per barrel, for three years' shipping.

DELEGATE: What kind of apples were they?

Prof. ROBERTSON: He has a good many Baldwins and Kings. He sprays five times a year, so that there are no spots. Two years ago he said he was astounded to find one man putting in small apples in a barrel—as the man thought, to help him out. He dismissed the man on the spot and gave him a dollar to go. That was told all around among his packers, and he says he has not had to dismiss a man since then.

This is from a report dated November 22.—"Nova Scotia fruit is well spoken of this current year, but the general opinion regarding Canadian apples" —(Ontario and Quebec Provinces)—"is that they are worse this year than ever. I am looking into the matter, and will report to you later. . . . I saw a few

barrels Canada Baldwins well graded and nicely packed, but they were very wet. I should judge the wet is caused by the barrels being stowed in heated holds without ventilation. I have not heard complaints *re* Nova Scotia apples being wet or slack. The manager of the fruit department of the Army and Navy stores told me this morning that Nova Scotia apples were very good, but Canadian apples were most unsatisfactory in every way, and worse even than last year." That is an unbiassed report, and it is along the line of the report from Montreal before the apples were on the ocean at all. So it does not seem to me that the blame lies on the ocean transportation for the poor apples and the low prices.

Mr. CASTON: But there are a great many apples this year arriving in that condition that are well packed, owing to climatic conditions that were unusual.

Prof. ROBERTSON: I have one more letter. This is from Liverpool. The agent of the Department goes to Bristol and stays a week, and then goes to London, and then goes to Liverpool and stays a week, and looks for himself, and finds what he can learn. This is what he says: "I called on Woodall & Co., Temple Court, Liverpool, *re Canadian apples* and they complain very much about the quality and condition; they sold a lot of Ontario apples for 1/9 per bbl. (gross) this week, (slack and wet). They find no fault with the shape of the barrel (bent staves) and prefer it to the Nova Scotia barrel. They account for the large number of slacks to the jolting on freight trains in Canada. The quality of apples they say is not so good this year, they are more liable to sweat and become soft, than usual. I asked them to send you catalogues of their fruit sales which they will do."

You see something of the condition of the apple trade. You knew it before I said anything. I have not come to give you information that is new to you all, but I have put it in the light of reliable and official reports received on this year's business.

I speak now with a good deal more diffidence, because this is a business with which you are more intimate and of which you are certainly better able to judge than I. I suggest this to your very serious consideration: Should there not be an application of some official, recognized standard for apples packed for export? Should not the standard first of all include some designation that the size of apples in a barrel are not less than so and so in inches? Should there not be some standard of size, so that a purchaser buying a certain grade may expect that the apples in the barrel will be all up to specified size? Then should there not be some definite standard of quality in regard to soundness, to shape, and to freedom from blemishes? And then should there not be some standard of variety? I mean some enactment providing that only certain apples could be legally called Kings and Baldwins and Northern Spys, and that no other sort of apple could be legally called by those names. I would like you to think that out. Don't we need standards for these three things? I don't mean that we should make the branding of them compulsory. Should we not have some reliable measuring guage for a barrel or other package of apples and pears? You could not do business if you said only to a man, "I will sell you a box of cheese at so much per box." It might be a big box or a small box. We need a standard for size and quality and variety.

Then let me make another suggestion. Do we not in Canada need some enactment that will require the branding of the name of the grower and the name of the packer on every closed package of fruit for export? (Hear, hear). Should we not require that? You say, "What business is it to the Government that a man should put his name on?" Well, the Government is a form of co-operation of all the people to make this a desirable country to live in; and if it becomes more desirable to do business in by having this done, and no individual's liberty suffers injustice, why not do it? If a man brands the names, John Brown, grower, William Smith, packer," on the package, and if he brands it, "A

No. 1 "—if that be the standard for size or quality—or if he brands it "Northern Spy" and any inspector in Montreal or any other port finds a barrel of apples of John Brown's or William Smith's with something else than Northern Spy in it, and something that does not come up to the standard represented by the brand, then let that barrel and all similar barrels be taken at once and sold for what they will fetch, and the returns put in the hands of a committee of fruit growers to suppress fraud in Canada. (Laughter).

DELEGATE: Why do you wish the grower's name? He picks the apples and lays them under the tree. I don't see why his name should appear.

Prof. ROBERTSON: The object in putting the grower's name would be this: As far as he supplied good fruit he would get the benefit, from his own name being on the package; if he had bad fruit he is not liable to a penalty, but the putting on of his own name, if the fruit was condemned would be a means of keeping him from selling to a packer who would dishonestly pack the next year. If you had not both names you could not trace the fruit so well. The grower is under no penalty in any case, unless he is also the packer.

DELEGATE: There is some poor fruit in every orchard, and if a packer takes them all and packs them I don't see why the responsibility should be on the grower.

Prof. ROBERTSON: If the grower lets the poor fruit go off his place mixed with the good he can't object to the buyer doing the best he can with what he buys; and that is what is 'playing hob' with the business. I am making only a suggestion, not even recommending this to you. You can discuss it. If a grower sells his orchard to a packer he is nevertheless the man who is most interested in the trade next year and during future years. Now, his name appearing on the barrel would not make him liable for anything, but it would make it possible to trace the fruit back and send him word that some fruit with his name on it was found badly packed and found so as to do the fruit trade of the country harm. It is for you to discuss these things. I suggest that the standard should include a designation for size, should include a description of quality, and should include a statement of the variety; and then I would suggest in the next place that there should be compulsory legislation, that the grower's name and the packer's name should appear as such grower and packer on every package of fruit intended for export. Other countries do that now in regard to some other things, and they find it exceedingly useful—for instance, New Zealand in regard to butter, and other countries in other things. And then, in the third place, the suggestion as to whether it is not desirable to impose some penalty. Now I said "confiscate." My notes, which I thought out more carefully, do not say confiscate. But as to whether there should be some penalty imposed on any one having fruit bearing false brands, and if so, what the penalty should be. I suggest these three things to the Convention as being needed to put the commerce in large fruits on an honest and safe and profitable basis. I believe that the adoption of these suggestions would help in that direction; and I thank you for your patient hearing. (Applause.)

THE PRESIDENT: I think we are on the right road to get at these difficulties in some way that we will be able to deal with them. It certainly is coming before us so very plainly, and the fact that so much of this fruit is in such bad condition at Montreal, Halifax and St. John is somewhat of a surprise. The idea that the fruit leaving this country would be in that condition at the port before shipping is something remarkable. It becomes more and more apparent that the fruit is fraudulently packed. These baskets that we have here, and these reports that we have, all confirm this. Now we will be pleasad to have any discussion of the matter. I am sure Prof. Robertson will be pleased to answer any questions that you may ask.

Mr. REID (Belleville): If I were a grower I would have no objection to my

name appearing on a barrel; but Prof. Robertson says the packer's name should appear. Now if the packer means the shipper, I think it would be all right; but if the packer is merely the packer working only as a packer, not the exporter, I do not think his name should appear.

Prof. ROBERTSON: By the word packer I did not imply the name of the workman who packed, but the name of his superior who owned the fruit. The owner who is responsible is the man I was after.

Mr. REID: The shipper.

Prof. ROBERTSON: He may or may not be. William Smith may grow, John Brown may buy, but John Brown may sell to a Montreal exporter. I want the names of the two men who are responsible for the condition in the barrel. Of course the buyer is the man I want—not necessarily the exporter, because the buyer might sell to an exporter.

A MEMBER: The man who is selling must sell to the highest buyer. He does not care for his name on the package; he wants the most money for his orchard. How is he to get over it?

Prof. ROBERTSON: If a man has an orchard yielding him 200 barrels it is to his interest to get the largest price he can for those 200 barrels; but it is far more to his interest that there should be a demand for future crops from his orchard, and that he should not sell to a man who would get his orchard a bad name or get the country a bad name. So that if a man this year sells for $2 to a man who would handle it at a profit, he will get that $3.50 by and bye. So the grower makes a huge blunder if he sells for a high price one year to a man who damages the fruit trade. That is why I want to see that the growers are interested even more than the shippers; because if it were not for this bad fruit we would have got into Canada this year at least—how much do you suppose? Well, I think a million and a quarter dollars more for the same barrels of fruit, as near as I can figure (Hear, hear), more than we have got now. Now, that million and a quarter dollar loss has done nobody good. Now, if we can get a million dollars some way, the farmers would get their share of it, and the railways and the steamships would get a share of it.

Mr. POWELL: The position which Prof. Robertson has given of the apples in your country is very much the same in my own. I have listened with a great deal of interest to the presentation of this question, and I must say that Canada is not an exception in this matter of large quantities of defective fruits sent upon her markets; and I have been extremely interested in this special investigation, which it seems to me is going at the root of this matter. (Hear, hear). What Canada is doing in this direction is going to benefit our entire country; and I want to express to-day in this association my great satisfaction in knowing that you here in Canada are taking a forward step to correct this condition of things, which certainly is a calamity for both your country and the United States. (Applause). There is no question that the consumption of apples can be increased in foreign markets 100 per cent. if we will only send our fruit there in a better condition. There is one point which I would make here, and this I think I made yesterday—we have to begin in the orchards for this better quality. We have got to begin right at home, and we must produce the least inferior fruit there. If inferior fruit in grown in the orchard it will find its place somewhere in the market; and so long as that exists, so long we are going to find difficulty and trouble in the marketing of our fruits. And so the whole question of culture comes up again; the whole question of fertilizing the soil; the whole question of properly pruning trees that may make it possible to produce a very fine quality of fruit in our orchards. The question of spraying enforces itself upon us here with renewed importance after listening to the this very able report. We must begin at the orchard and eliminate there as far as possible inferior quality. I I want to say I heartily endorse your action in this Association and in your

Dominion in taking these practical steps toward removing this great trouble of putting upon the English and foreign markets so much of poor fruit. One other point, and that is the local market. As Prof. Robertson has said here so truthfully this morning, we should grow finer fruits for our home consumption. The Keiffer pear is good to export for the reasons which Prof. Robertson has stated. The Ben Davis apple has good shipping quality, and it is liked for that purpose. But for home consumption we should aim to produce fruits that have finer eating qualities than either of those fruits which I have mentioned, and and there are any number of consumers who will purchase fine high-flavored apples and high-flavored pears if they can only receive these fruits in clean, sound, good condition for their own use. And so we have a good deal to learn in relation to the methods of handling and growing these fine fruits for home consumption. As the consumption of apples can be increased 100 per cent. in foreign markets, it is equally true that the consumption of finer-grown fruits can be increased 100 per cent. right here at home, and that that being done the sclution of profitable orcharding is right here at our own doors. (Applause.)

A. H. PETTIT: Do I understand Prof. Robertson to say that if his suggestions be adopted it would mean an inspector or inspectors of all apples being shipped from this country?

Prof. ROBERTSON: I have no authority to speak for the Government in regard to appointing inspectors.

A. H. PETTIT: How would we arrive at it without?

Prof. ROBERTSON: Ask and ye shall receive, I suppose. (Laughter.)

Geo. E. FISHER: I understand that you suggest that the shipper may put up any sized fruit that he chooses, but that his package must state the minimum size of the contents?

Prof. ROBERTSON: Yes.

Mr. FISHER: In my experience in shipping fruit I find that a great deal depends on the condition in which the fruit is picked. This is a feature of fruit handling that has been entirely overlooked down to the present stage of this discussion. I believe there is a right time to pick the fruit, and that the grower should have his eye on the fruit continually. He should pick his fruit in this particular stage, and he should cool it and ship it without delay, and where this is done I think there will be very few "slacks" and "wets" on the other side; and I believe that the practice of allowing fruit to remain on the tree until it suits the convenience of the grower to pick it, and then putting it on the ground and leaving it there until it suits the convenience of the packer to pack it. is responsible for the slacks and wets to a greater degree than any other cause.

The SECRETARY: I would like to call attention to the fact that we have with us some representatives of the Montreal Horticultural Society—Mr. Shepherd and Mr. Dunlop, and also the President of that Society. I think they should feel free to address the meeting or to speak to the subject before us. (Applause).

The PRESIDENT: We will be very pleased to hear from any of these gentlemen.

Mr. R. W. SHEPHERD, of Montreal: I am really quite unprepared to say very much, but this question of packing and grading of fruit is most interesting. Now it appears to me that the system of packing in Ontario is wrong as compared with the system in Nova Scotia. As I understand it, in the majority of cases in Nova Scotia the growers are the shippers. Of course if the grower is the shipper he will see that he will he gets No. 1 apples in the No. 1 barrels, and he will ship accordingly; and No. 2 apples will be branded No. 2? In Ontario, as I understand it, the general practice is for the grower to sell to some packer who is in the habit of buying the entire orchard and packing them to suit his own convenience. Well, it seems to me that that is the beginning of the mistake. If the grower could be educated to pack up No. 1 apples and sell them to the buyers

who will export, then I think you will get No. 1 apples shipped to the other side. Otherwise, if you are going to leave it to speculators, you will never get over this difficulty. In the Province of Quebec, of course, we do not have such large areas of apples grown, and the orchardist in the Province of Quebec, as a rule—men like Mr. Newman our President, and others—pack up their own apples and ship them, and they know what they are doing, and as a rule I think they find it is very profitable—more profitable in the long run than the system that is adopted in Ontario. Our principal apple is the Fameuse, or the Snow apple, the McIntosh Red and the Wealthy and Duchess. These are our leading commercial apples. The Duchess we find difficult to sell, but we in the Montreal district have been shipping the Duchess to Liverpool and Glasgow, picking them before they are ripe and selling them as cooking apples. We find that they fetch better prices that way than selling on the Montreal market to compete at that particular season with the California fruits. No. 1 Fameuse, packed in a proper way, will bring a No. 1 price, and we have no difficulty in selling No. 1 Fameuse. It is the most profitable apple we grow; and in the same way with Wealthy and McIntosh Red or any red apples. My experience is that red apples are the apples to grow for the English market, and if we put them over there in good condition we are sure to get a good price. (Applause.)

MR. NEWMAN, (President of the Montreal Horticultural Society) said: I have been very much interested in this discussion over the packing, and I think such steps should be taken as Prof. Robertson has suggested outside, so that it would be advertised throughout the country, and a man has a guage to work by when he is packing a barrel. I have had some experience with the storage of apples, and I think your losses this year have arisen very much in the same way as losses that have occurred to me. I have stored these very sensitive fall apples in cold storage in Montreal, different cold storages there, and outside of the temperature I have become convinced that the condition of the atmosphere is quite as important as the low temperature. I have had apples decay quite as rapidly as the cold storage, or almost as rapidly, on account of the dampness, as in a much higher temperature with a dry atmosphere. The apples being picked and often left in the orchard several days at a warm time, perhaps the air holding moisture at the time of picking, there is a ripening going on which develops more moisture, and even if those barrels are put in cold storage there is so much moisture in the barrel that they are in a very damp condition, and unless the air is very highly absorbent of moisture there will be so much moisture on the skin of the apple that rotting will take place very quickly. Now, the storages at present in Montreal are none of them, I think, of a dry nature. There is the pipe system, and granting that you would have the same air with the pipes—the pipes would absorb perhaps the contents in ice of the moisture in the air—but the doors being open so much, the air being changed continually, practically the chambers there are saturated; water is on the floor in a great many, and there is no drying power at all. I noticed this especially with my fruit last season, and whereas I have kept them in a chamber that happened to be dry other years until May, last season in the latter part of January we had to take them out on account of ripeness. There is another system started now called the dry air system, or the cold air system, and although that is rather surer to be dry I do not think it has any absorbing power. So if you were to ship from here a barrel that had been packed say the week before it got there, and the apples had considerable moisture on the skin, I do not think the apples would dry. The air is dry itself. It is chilled to about ten degrees lower temperature than the room. It rises that much, but in the chilling chamber I think it is fully saturated with moisture. It has just the drying power that the ten degrees of rise would give it, and I see going on there now re-packing of Greenings and Northern Spys and shipping to England. A great many of the Northern Spys are about half gone, and the

Greenings are a considerable loss, and I do not see how they will be any credit even when re-packed, going over; a great many of them, when you take them up, will quite damp and greasy on the outside, and they have been there a considerable time. I should think if the skin was dry they would be in a very much better condition, although I dare say the damage was done before they reached the storage.

Mr. DUNLOP: I appreciate very much the address of Prof. Robertson. I would revert to only two points. I think the discussion has tended to show that a great deal of trouble has arisen from negligence in packing the fruit. But I think the chief point raised was that we grow altogether too much bad fruit; and if we can improve the fruit by higher feeding of our orchard, by proper pruning in trees, and by proper thinning of our fruit, this thing will gradually cease and we will have a greater proportion of good fruit and as a consequence take care in shipping it.

Mr. CASTON: How many tiers deep do they pile these barrels in vessels?

Prof. ROBERTSON: It depends on the ships. Very few ships can take more than four tiers, or about seven feet. A few ships have what they call bunk holes. and in these they pile deeper. In other ships they carry them in what they call the oar loft, about 7½ feet deep. In reference to forming standards, after thinking the thing over a good deal my own preference would be this: for a standard specifying the sizes, not for the variety, but just 2, 2¼ and 2½ inches, and then allow 10 per cent only of the contents to be under that size; and then No. 1 would indicate the good quality, No 2, No. 3, and then for anything special say Extra No. 1. I mean we must use terms that are easily understood in commerce. Then if you have size 2½ inches, No. 1 Northern Spys, or size 2 inches A No. 1 Snows, you get three things all indicated in the very simplest terms, because if you say "A No. 1 Snows" which indicate one size, and "A No. 1 Kings" which indicate another size, you would get confusion. Let us stick to the size in inches; that is easily got at, and then to the quality, No. 1 or No. 2, and then A No. 1 for extra good. Now let us take action, and see if something further is not done, because when I go back to Ottawa I am busy with cold storage, and the Minister is busy with other matters, and then another year goes by and there is no progress.

Messrs. G. E. Fisher, A. H. Pettit, W. H. Bunting, G. C. Caston, T. H. P. Carpenter, M. Pettit, and E. D. Smith were appointed a committee to deal with the matter.

The SECRETARY read the following resolution, which was carried amid applause.: "That this Fruit Growers Association hereby tenders to Mr. Geo. T. Powell, of Ghent, N.Y., their high appreciation of his very able and admirable addresses and kindly assistance during the present sessions of the Association."

The PRESIDENT: I have great pleasure. Mr. Powell, in tendering you the very hearty thanks of this Association for the excellent service you have rendered us. I am sure we have been very much instructed from your addresses. We hope at some future time to have the pleasure of having you with us again.

Prof. ROBERTSON: If that resolution had not been put quite so promptly I wanted to say just one word. Many years ago, when the Farmers' Institute system of Ontario was quite young, full of promise, but with very little history of a good kind behind it, some of us had the good chance of going to New York State and seeing what excellent work was done by the Farmers' Institutes of that State. Now, Mr. Powell was one of the fore most men in New York State in giving the Farmers' Institutes in that State the most practical and useful turn, and we in Ontario have since those days reaped a great deal of information and inspiration and enthusiasm through our Farmers' Institutes, the beginnings of which, in some parts at least, were in the State of New York under the care of Mr. Powell, who is here to-day. (Applause).

Mr. POWELL: It has certainly given me great pleasure to meet with you at this time, because I recognize that we have a common interest, that the prosperity which may come to you from all this line of educational work, through your Association, through your Farmers' Institutes, through your Department of Agriculture—whatever good comes to you is not confined to you, but extends beyond your borders and to us also. And so it is always a pleasure to meet bodies of men who are working earnestly to improve the conditions that are surrounding them; and it has certainly given me very great pleasure to be able to meet with you at this time, to take in your deliberations; and I want to say that if I have given you anything that has been helpful to you, that I have gained more myself in the short time that it has been my privilege to spend with you. (Applause).

REPORT ON SAN JOSE SCALE.

By MURRAY PETTIT, WINONA.

In February, 1898, a commissioner was appointed with instructions to make an examination of all fruit trees which had been planted five years and less in the counties of Halton, Wentworth, Welland, Lincoln, Lambton, Essex, Kent and Elgin, and to spend no time on trees planted in 1898, as these had been previously examined in the nursery. It was subsequently learned that the scale had been in the country at least seven years at that time. It was also found that the scale had been widely distributed in Ontario on nursery stock planted in the spring of 1898. No one can be blamed for these mistakes, as they were acting under the best information available at the time.

When it was found that the scale had been distributed on the nursery stock planted in the spring of 1898, Mr. Fisher was instructed to get a list of the sales from the infected nurseries and follow these trees to the limits of Ontario and examine them where they had been planted, which included nearly every county in the Province of Ontario. They succeeded in locating the scale in 100 places and destroying the trees. These 100 places were re-examined last spring, when the scale was found in only 13 of them, and again this fall when the scale was only found in 10. These have all been destroyed except in four, where the owners so far have declined to take them out. Now, when you consider 100 places being infested by the nursery stock sent out in one season, how important it is that all nursery stock should be thoroughly inspected and fumigated.

Mr. Fisher was then instructed to make careful examination of the nurseries and have the work completed before digging commenced. Last spring the work was started on the 12th of January with 20 men, and on the 20th of March 104 nurseries had been examined. The scale was found in five of them and has since been located in two more. The next order was to examine those orchards in which the scale had been found in 1898 and those to which it might have spread, locate all infested trees and have them destroyed before breeding commenced. These trees were located. While this work was being done the minister was waited upon by deputations of fruit-growers from Niagara and Essex protesting against the carrying out of the provisions of the Act. In some instances the fruit-growers' themselves made attempts to prevent the inspectors from carrying on the work. The minister was obliged by the force of public opinion to desist, and suggest a commission. Compulsory destruction of infested trees were discontinued and the scale has multiplied and spread so rapidly that now the conditions are entirely changed from what they were a year ago. It is a most important question for this association and the fruit-growers of this province to consider what should be done.

I beg leave to move the following resolution:

"The fruit-growers of Ontario desire to express their great satisfaction with the efforts made by the Ontario Department of Agriculture to destroy that most serious enemy of the fruit-grower, the San Jose scale. They regret exceedingly that any suspension of the working of the Act should have taken place, thus allowing the pest to spread with great rapidity.

"In view of the uncertain results of the work of experiment stations in the United States in the treatment of orchard trees with whale oil soap for the destruction of the scale, we recommend,

"That there be no relaxation of the inspection of orchards or of the destruction of infested trees, but that the work proceed with all vigor, while it is possible to prevent the spread of the pest.

"That in case of valuable orchard trees only slightly infested, the owner have the choice of having his trees destroyed, with compensation, or of having them treated for a certain length of time for the destruction of the insect.

"That the owner of an infested orchard, who wishes to have exposed trees treated instead of destroyed be required to thoroughly prune the orchard trees exposed in such a manner as may be required by the inspector, as a preparation for the spraying.

"That all nursery stock be thoroughly fumigated with cyanide of potassium gas under the eye of an inspector before it is allowed to be sent out."

Mr. HAROLD JONES: I have listened with interest to Mr. Pettit's report, and as representative from the eastern end of the Province I take pleasure in seconding the motion.

The SECRETARY: I think that the only question that would require any discussion at all would be whether any larger or greater freedom be allowed to individual orchardists to treat their trees than is allowed in this resolution. The only case that the resolution permits for the owner to treat his trees is where the trees are not plainly infested, but only supposed to be infested with the San Jose scale. Now, I am inclined to think that there might be a little greater liberty allowed, so that where any orchardist was willing to undertake to treat his trees under the inspector's directions, he might do so and not forfeit anything thereby. There is no danger of scale spreading from the tree while it is being properly treated, so there would be no harm to anybody but himself if the grower was successful in the treatment, and it would not prevent those trees being destroyed later if the treatment was unsuccessful. I believe it would meet the wishes of a large number of growers who are fighting vigorously against the Act if the option were allowed them of having them treated under the inspector, even if they have to go to a portion of the expense of having them so treated. That is the only portion of that resolution, it appears to me, might be modified to a certain extent. I believe otherwise that that resolution ought to have the hearty endorsation of this Association in order that the Provincial Minister of Agriculture might feel free to act in accordance with the wishes of this Association.

Mr. ROBERT THOMPSON (St. Catharines): I understand that the resolution makes no provision for the owner if he has a valuable orchard slightly infested and wishes to save that orchard, if it were possible to go on and do that under proper supervision.

The PRESIDENT: No, no provision for that. That is what is suggested to make that provision.

Mr. THOMPSON: I think from our experience in the south, in Niagara District, that unless some provision of that kind be made you will have terrible opposition to the Act like what we have had in the past—possibly such opposition as would hinder the working out of the Act as it has been hindered in this past season, allowing the terrible spread of this insect pest. I think it would be wiser, especially from some of the reports that we have received from other places, from some of the States in the south, that in sections like that around Niagara town, or up in the west in Kent, where there are large areas of two or three miles that are badly infested, where it would involve a large amount of money to pay for these trees, possibly a larger amount of money than the country would be willing to grant, an arrangement should be made for treatment which, if it would not eradicate the pest, would keep it in check. From my experience I believe wherever there is a small infestation the trees should be taken out at once without a day's delay, or a minute's delay, in the summer; but where there are larg

infestations the opposition has been so strong, and there is such a large number of trees in the area, running up into the hundreds of thousands, that it should be modified a little.

The SECRETARY: My amendment would be this, to change the clause to read, "that in case of valuable orchard trees only slightly infested the owner have the choice," and that the latter clause be cut out which says, "and in case of failure, of having them destroyed without compensation." Unless the mover of the resolution would make that change I would move that it so read.

M. PETTIT: I am quite willing that the change be made if it is the wish of the meeting to do so. I would like to ask the Association how we expect the Minister to carry out what we are asking him to do in that resolution, when it was all that he could do, and he vainly tried to get a larger appropriation than he has already expended, and when what we are now asking him to do would cost ten times that amount—roughly estimated at $300,000? No; the destruction we are asking for would cost such an amount the Minister never could carry it out; and what would be of great assistance to him, in my idea, would be for every Association in every country, or, even where they have not an Association, for all the leading fruit growers, to petition their representative in the House and urge upon him the importance of this work being carried out. That would very materially assist the Minister in carrying out what we are asking him to do.

The SECRETARY: I second this resolution as amended.

The PRESIDENT: I would just like to say in reference to the township I live in, the Scale has been found in that township in some 25 places, in every case, except two, on young nursery stock just set out from one to two years old. In every case it is entirely eradicated except the two where they were fully grown trees. Now, had that been allowed to spread our township soon would have been infested from end to end. To-day there are but two orchards at all infested. What is that worth to a township largely given up to fruit growing? I think that this work ought to be carried on at any expense by the Government, and the Scale stamped out. There may be sections where perhaps it would have to be carried on to a very large extent, but I think that the matter of a few thousand dollars ought not to be considered. I believe that had those trees been left in our township, probably inside of five years every orchard would have been infested. To-day we are clear except in two orchards, and they are in a position, I think, that can be safely controlled.

The resolution as amended was then put and carried.

Messrs. M. Pettit, the President, Robert Thompson, G. E. Fisher, Joseph Tweedle, E. Morris and E. D. Smith were appointed a committee farther to consult with the Minister of Agriculture in regard to this matter, and fully explain the wishes of this Association to the Department.

GEO. E. FISHER (Burlington): I would like to explain to the meeting two or three little matters in connection with our work for the investigation of the San Jose scale. It has been frequently stated, and no doubt you have read, that the Scale has been upon hardwood trees. There is one street in St. Catharines known as Robins street. On each side are trees, in which are planted fruit trees that are infested with the Scale. We have spent, on three or four different occasions, considerable time looking into the shade trees, which comprise hard and soft maple, and elm and horse-chestnut; and so far we have not been able to find any scale on those trees. At the north-east corner of the orchard of Mr. Aaron Cole, which is supposed to have been the original source of infestation in that section of the country, there is an elm tree. It is a tree which was probably six or seven inches in diameter, and was cut down to the surface of the ground. From the stump has grown up a second growth of elm, probably ten feet high at the present time and there were two Inspectors who spent considerable time on this tree, supposing we would be sure to find the Scale there, because a short distance from this elm was

a badly infested tree taken out; but we failed to find any Scale on that tree. Within ten paces of where the infested tree had been destroyed, we found a little elm which we examined very carefully, but found nothing. In the yard of Mr. Hutchinson, who lost upwards of a thousand trees from Scale, the trees were just alive with them. On the opposite side of the road is Mr. Stewart's place, which was badly infested, and just a little further to the south there is the Wilmot orchard in which there were some six or eight hundred peach trees which were very badly infested; and those were in the direct line of the prevailing wind, south-west from Mr. Hutchinson's door-yard, and we thought we should find some trace of the Scale in the shade trees, but we did not. Then on the other side of the road, a little farther to the north, there are about ten or fifteen acres of slashing in which there are all kinds of young growth, and we have spent a great deal of time in that slashing looking for Scale, without finding it. My information is that wherever the Scale has been seen on the elm tree it has been under very peculiar and extraordinary circumstances; but the scale is not likely to infest the forest trees—that it does not thrive on those trees where it is found. It has also been said that the men who were going about the country looking for Scale can't tell the San Jose scale from other species of scale. I say they can. Professor Howard, the chief entomologist of the United States, has made the statement that as a matter of fact a person with a little experience can determine the San Jose scale from the other species with a hand lens. That was our experience. Now then, it is also said that the Scale has been in the country a great many years, some say forty years. It might be worth while for me to state what is accepted as the only authentic history of the introduction and discovery of the San Jose scale. It was in the spring of 1887. Stark Bros., of Missouri, are a nursery firm doing a large business at a small town named Louisiana in that State. A nursery firm in California were propagating a plum that they called the Kelsey, and which they advertised as being curculio-proof. The Missouri firm made a purchase of these trees, and when the consignment came they proved to be so inferior on being examined that the Missouri firm rejected them, and wired the California firm as to what they were to do with them. The answer came that they were to send them on to New Jersey. They went into the hands of those two nurserymen with whom the scale was subsequently found. Now, this is the history of the introduction. In the meantime, Dr. Hodges, of Charlotteville, Virginia, had planted a pear orchard. In August, 1893, he found on some pears on those trees something which he supposed to be a fungus, and he sent two pears to the entomologist at Washington to have it made known to him what the trouble was. When they saw the pears they at once recognized the Scale, and sent a man back to Virginia to inspect the orchard. This Inspector returned to Washington in a short time and reported that he had found the whole place infested, and that the trees had been got from a nursery in New Jersey. Well, he was sent on to New Jersey to examine this nursery, and from the one nursery he went to the other and he found the Scale generally distributed in both these nurseries; and he also found that during those six years these nursery firms had been distributing the infested nursery trees all through the United States and into Canada; and this is accepted as the history of the introduction and distribution and discovery of the San Jose scale in the east.

EXPERIMENTAL SPRAYING IN 1899.

By W. M. Orr, Fruitland.

I am pleased to be able to report that the experimental spraying of fruit trees which has been conducted by the Department of Agriculture for Ontario

during the past five years, has again been productive of satisfactory results. —results which justify its existence. As in former years, the work was done regularly at 30 points scattered over the Province. It was intended to reduce the number of stations, but requests were so urgent that it was impossible. In addition to this an extra man had to be sent a couple of trips to a point which could not be included in the regular routes. Three agents were constantly on the road from April 25th to late in July, each point being visited six or seven times.

The attendance was largely in excess of any previous year, and enquiry for bulletins and information by mail was unprecedented.

Over 30 applications for the work in different localities had to be refused, and since the beginning of the season 15 other applications have been received.

Of course attendance is the standard by which we must estimate the interest taken in the work.

In 1896 only three stations could show a total attendance during the season of 100. In 1897, 7 stations came up to that mark. In 1898, 20 of the stations reported the attendance in three figures, and in 1899 no less than 27 out of the 30 stations made the century, the highest attendance at any one point being 281, at Southampton. The total attendance was 4718, being 1180 more than any previous year.

The mixture used was the old formula:

Copper Sulphate	4 lbs.
Fresh Lime	4 lbs.
Water	40 gals.

From 4 to 7 ozs. Paris Green was used with the above mixture according to the insects to be destroyed. As near as possible the following directions from the 1899 bulletins were followed:

First spraying: Bordeaux mixture and Paris Green when the buds are swelling.

Second spraying: Bordeaux mixture and Paris Green before the blossoms open.

Third spraying: Bordeaux mixture and Paris Green when the blossoms have fallen.

Fourth and fifth spraying: Bordeaux mixture and Paris Green at intervals of ten to fifteen days if necessary.

Systematic spraying is being taken up all over the country in the wake of the experimental work.

The manufacturers of spraying outfits have been unable to keep up with their orders even by working overtime. One of the largest manufacturers writes me: "In 1897 it was in 10's, in 1898 it was in 100's, but this year it was in 1000's."

The buyers appreciate more than ever the advantages to be derived from handling sprayed fruit, and I do not know of a single buyer who is not now an advocate of spraying. Some years ago the claim was made that sprayed fruit was larger, cleaner, better colored, better flavored, and that it possessed better shipping and keeping qualities than unsprayed fruit. This was a sweeping claim certainly, but one which has been fully proven by the records of the experimental work.

One gentleman told me that he had in one shipment to the old country this fall both sprayed and unsprayed apples. The sprayed arrived in splendid condition and brought satisfactory prices, only one barrel being slack. The unsprayed fruit was reported slack, wet and wasty, and did not pay the freight. This was especially gratifying as he was not inclined previously to favor spraying

One of the largest growers and most extensive shippers in Ontario, who

until this season, would have nothing to do with spraying, told me recently that he had made up his mind that he would have to adopt spraying or give up growing.

This year's experience confirms my belief in the statement made at our meeting last year that the Codling Moth can be controlled by spraying throughout the greater part of Ontario, but in some sheltered localities such as the Niagara Valley bandaging will have to be used in addition.

To obtain some data on this subject I carefully watched a number of bandaged apple trees during the past season. The trees were sprayed.

Trees were bandaged June 1st and examined June 15th, but no larvæ was found.

July 1st a few larvæ and several pupæ were found.

July 15th as high as 128 found on single tree, rather more than half pupae.

July 29th as high as 161 on single tree, about half pupæ, also a moth just hatched under the band.

Aug. 12th as high as 119 found on a single tree, about one-sixth of which were pupæ.

Aug. 28th as high as 142 larvæ on single tree.

Sept. 15th	„	155	„	„
Oct. 1st	„	30	„	„
Nov. 4th	„	123	„	„

From a single Baldwin tree loaded with fruit we trapped in bandages 761 specimens, from July 1st to November 4th.

The bandages were examined every two weeks, which appeared to be frequent enough. Pupæ were found up to August 12th. If these require two weeks before the moth escapes, and the moth occupies from one to two weeks in depositing her egg, and another week is required to hatch the egg, we shall have larvæ attacking our apples up to the middle or third week of September. This, I am sorry to say, is about our experience in that locality.

An exhibit of sprayed and unsprayed apples was made at the Industrial Exhibition, Toronto. The owners of the orchards where the experimental work was done were invited to select and ship samples of sprayed and unsprayed fruit of the same varieties, which would fairly represent results of the work. The exhibit when placed formed a striking object lesson as to the value of spraying.

Some were incredulous and believed that the selections were not fairly made. Allow me to read you an extract or two from letters I received. Mr. H. McCormick, Paris, writes:—"You will think some of the unsprayed ones are very uneven in size, but I could not help it."

Mr. Jos. Sandy, Omemee, writes:—"More contrast in appearance of the trees than in the quality of fruit."

Joseph Ranton. Palmerston, says:—"I was afraid to send an honest exhibit for fear the people would not believe it possible to secure such results."

Probably the most striking contrast, and the one most criticized, was in the exhibit of Mr. J. Dance, Wiarton; but an inspection of the orchard fully justified his selection.

Record of Spraying.

Joseph Ranton's Orchard, Palmerston.

Spy.—Sprayed, 96 p.c. clean; unsprayed, 12 p.c. clean.
Snow.—Sprayed, 83 p.c. clean, heavy crop; unsprayed, 4 p.c. clean, light crop.
Ben Davis.—Unsprayed, 52 p.c. clean.
Astrachan.—Sprayed, 75 p.c. clean; unsprayed, 30 p.c. clean.
Cayuga Red Streak.—Sprayed, 92 p.c. clean; unsprayed, 48 p.c. clean.
Colvert.—Sprayed, 88 p.c. clean; unsprayed, 44 p.c. clean.
Russet.—Sprayed, 72 p.c. clean; unsprayed, 76 p.c. clean.

Mr. Ranton writes:—"Concerning the experimental spraying which was carried on in my orchard this summer, I would say the benefit derived from spraying is almost incredible. Last year I had not enough sound fruit for our own use, and this year, owing to the effects of spraying, we have enough for home use and sold 40 barrels besides. I have 100 trees in my orchard, and there were only 15 sprayed, and two-thirds of the fruit was on the sprayed trees. The foliage of the trees showed green and healthy looking beside those not sprayed. As an evidence of my relying on spraying I bought an outfit and every tree in my orchard will get the benefit next year."

This orchard is 30 or 40 years old, stands in a new sod, and is in fairly good condition. Mr. Ranton says he never sold over $10.00 of fruit from it in a year before. The crop last year was heavier than this, but there was scarcely any good fruit.

J. McNab's Orchard, Southampton.

Baldwin.—Sprayed, 80 p.c. clean; unsprayed, 52 p.c. clean.
Spy.—Sprayed, 80 p.c. clean; unsprayed, no clean fruit.
Greening.—Sprayed, 87 p.c. clean; unsprayed, no clean fruit.
Colvert and Baldwins, unsprayed, heavily loaded, no clean fruit.
This orchard is in sod and fairly well cared for.

There are 80 trees in this orchard, but Mr. McNab has never sold any for packing, and never more than $10.00 worth in any one year previous to this year.

Mr. McNab writes as follows:—"The summer of 1899 was the first season my orchard was sprayed. The results were very marked. I would strongly recommend to all parties having orchards the benefits derived from spraying, the apples being much cleaner and finer in appearance, and the foliage remained green longer than previous years.

"I may also state that for the first time in my experience I sold my apple crop to buyers from a distance, thanks to spraying. Next year I hope to continue the spraying, and anticipate good results."

Mr. D. Gillander's Orchard, Wellington.

Talman's Sweet.—Sprayed, 96 p.c. clean: unsprayed, 76 p.c. clean.
Spy.—Sprayed, 92 p.c. clean; unsprayed, 12 p.c. clean.
Holland Pippin.—Sprayed, 90 p.c. clean; unsprayed, 15 p.c. clean.
Baldwin.—Sprayed, 100 p.c. clean; no unsprayed trees.
Russet.—Sprayed, 100 p.c. clean; unsprayed, 72 p.c. clean.

The packer who bought these apples said they were the cleanest he had found for years.

G. Lambert's Orchard, Thornbury.

King's.—Sprayed, 89 p.c. clean. This tree is 23 years old, and gives its first clean fruit this year.
Canada Red.—Sprayed, 93 p.c. clean, heavy load; unsprayed, 20 p.c. clean; most of the fruit dropped off.
Snow.—Sprayed, 84 p.c. clean; unsprayed, 4 p.c. clean.
Greening.—Sprayed, 92 p.c. clean; unsprayed, 4 p.c. clean.
Astrachan.—Sprayed, 90 p.c. clean; unsprayed, 50 p.c. clean.
Cayuga Red Streak.—Sprayed, 88 p.c. clean; unspraped, 57 p.c. clean.
Spy.—Sprayed, 96 p.c. clean; unsprayed, 18 p.c. clean.
Alexander.—Sprayed, 85 p.c.; always scabbed before.
Irish Peach.—Sprayed, 75 p.c.; never fit for use before.

On November 23rd Mr. Lambert writes:—"With great pleasure I write the results of the Government spraying in my orchard this season. In the spring when the agent came upon the scene my orchard was infested with all kinds of insects, especially the forest tent caterpillar. At the first application the pest

was checked, and the general .tone of the orchard was good, foliage good, and fruit mostly set well. In gathering and packing every variety sprayed showed a marked advantage, scarcely any scale and much less codling moth than on the unsprayed trees. In all the varieties sprayed I would say there was an average of 80 p.c. to 90 p.c. of clean fruit. I feel convinced that spraying properly doné will pay better than any work on the farm."

The annual yield of apples in Ontario varies from 4,000,000 to 18,000,000 barrels per year. Estimating the average at 8,000,000 barrels. This can be increased easily by a third, and a much better class of fruit exported which would command an extra high price in the foreign markets. This is not supposition, but a conservative estimate, which is justified by the results obtained from a number of years thorough work in the experimental spraying.

Mr. PATTISON, (Grimsby): I would like for your information to criticize this spraying a little, and ask a few questions as to a thing that has puzzled me this season. I may say that I have personally sprayed with Paris green for a great number of years with fairly good results. This year for the first time I sprayed with copper sulphate and the Bordeaux mixture, and very carefully. My experience goes to show that in our district, while a very excellent application for the foliage, and also for the fungus spot, that the mixture of the Bordeaux mixture and the Paris green totally kills the Paris green. And in order to show you that I am not saying this without some reason, I left some of my trees and sprayed them only with the Paris green. A neighbor of mine, who has a nice plum orchard, told me that the curculio was working badly in his plums. He said he had never sprayed, and I let him have my old pump and he sprayed his plum crop very carefully with Paris green without any copper sulphate. He had a full and excellent crop of plums. I sprayed my orchard rather more often than he did, but I used the copper sulphate with the Paris green, according to the formula, on my plum trees. The result was that the curculio fattened on that application and actually screamed for more (laughter); and I lost two-thirds of my crop. It had apparently no effect whatever on the curculio. On the apple trees that were only sprayed with Paris green without the sulphate the proportion of clean fruit was about two-thirds, and on those sprayed with copper sulphate there was hardly any fruit to be found. Of course last season was a dry one, and the spot did not work to any great extent. Now, my explanation of this is that the lime kills the Paris green. Of course lime is absolutely necessary to prevent the sulphate of copper from injuring the foliage, but my experience is that the lime totally kills the effect of the Paris green. I have been enquiring into the subject since then, and find that several others have the same experience, I should like an explanation of this, because it cost me between $400 and $500 to find this out, if I have found it out.

Mr. THOMPSON: It is a common practice with us to mix Paris green with either land plaster or lime on potatoes, and we find it is a dead shot every time.

Mr. HUGGARD: I found in spraying with Paris green and lime for potatoes there were no beetles left when it got dry, but where we simply mixed the Paris green with water I sprayed three times and it did not kill them all.

Mr. PETTIT: Mr. Pattison's Paris green has been badly adulterated.

Mr. PATTISON: How do you account for the fact that those trees that were sprayed with the Paris green without the sulphate worked all right? I am not asserting anything; I only suggest that as a reason. I cannot see any other. If anybody can I will be very glad to know it.

The PRESIDENT: The survival of the curculio would indicate to me that the Paris green must have been adulterated, and it was just strong enough to make them sick and not strong enough to kill them. I have been spraying my own plum orchard with Paris green in this way for the last ten years, and it has been entirely satisfactory, and that has been the almost universal report.

Prof. SAUNDERS: I do not see how it is possible that the mixture of Paris green and lime would destroy the action of the poisonous principles in the Paris green. The Paris green is an arsenic of copper which is quite insoluble, and if lime was mixed with it I cannot see chemically how it would alter its nature so as to lessen its poisonous action. We know that London purple, which is a compound of Paris green and lime, has been used in many localities, and I never heard of its having lost any of its poisonous properties by having been associated with the lime. We know that Paris green is largely adulterated, and it may be that Mr. Pattison has got hold of a sample that was not up to the mark in strength; but I think it would be very unwise to allow any impression to go out from this Association that Paris green, when associated with lime in the Bordeaux mixture, is lessened thereby of its poisonous effect. The sulphate of copper when mixed with lime forms a mixture of oxide and carbonate of copper in suspension, and a good deal of the strength of the lime is utilized in making that change in the copper salt, so that it is not at all in as strong a caustic condition as it would be either in its association with arsenious acid in the London purple or in the case of an acid where the Paris green was associated with freshly slacked lime.

The PRESIDENT: In spraying plum trees with Paris green without lime you have to be very careful indeed, or you will seriously damage your foliage.

Mr. PATTISON: I have done it for years without any serious damage, until this year.

The PRESIDENT: What proportion did you use without the copper sulphate?

Mr. PATTISON: Two and a-half ounces to forty gallons of water.

SOME RESULTS OF EXPERIMENTS IN SPRAYING AT THE CENTRAL EXPERIMENTAL FARM IN 1899.

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

During the past ten years spraying has been one of the prominent features of the work of the Horticultural Division at the Central Experimental Farm. In 1890 the late Horticulturist, Mr. John Craig, began experiments in spraying, and ever since that time this work has been carried on with vigor, and no opportunity has been lost in impressing upon the fruit growers of Canada the great importance of it. In 1890 the use of the Bordeaux mixture was confined to a small number of the most progressive fruit growers and experimenters, while to-day it is a well recognized fact that if a man does not spray he will not, as a rule, have first-class fruit. The reports of the Experimental Farms containing the results of experiments in spraying, and the Spraying Calendars which have been issued during the past ten years, must have been of great service to the fruit growers of Canada, judging by the many letters which have been received testifying as to the value of the information given and the good results obtained by following the instructions in the reports.

It has been my endeavor during the past two years to give as much attention to experiments in spraying as time would permit, and also to adopt the best practices in the spraying of the fruit trees in the orchards at the Experimental Farm.

During the past year the experiments conducted have been of a very interesting nature, and it is hoped that the results will be of some service to our fruit growers.

Many of you have probably read Bulletin No. 38 of the Missouri Agricultural Experiment Station, in which are related certain experiments which were conducted by Prof. S. C. Whitten, the Horticulturist, the objects of which were to

prevent the winter-killing of the flower buds of the peach. Let me give his summary of results, which will give those of you who have not read this Bulletin an idea of what was done.

"I. In this latitude, winter killing of the fruit buds of the peach is usually due to the unfavorable effects of freezing after they have been stimulated into growth by warm weather, during winter or early spring.

"II. The early swelling and growth of the buds is due to the warmth they receive, is practically independent of root action, and may take place on warm sunny days in winter, when the roots are frozen and dormant.

"III. Peach fruit buds may safely endure a temperature of ten or twenty degrees below zero, provided they mature well in autumn, are entirely dormant, and the cold comes on gradually.

"IV. Zero weather may kill fruit buds that have swollen during previous warm weather, or that were not properly ripened in the autumn.

"V. Shading or whitening peach trees to prevent their absorbing heat on sunny days, opposes growth of the buds and is, consequently, a protective measure.

"VI. Shading the trees with board sheds enable peach buds to survive the winter uninjured, when eighty per cent of unprotected buds were killed.

"Trees protected in this way blossomed later, remained in bloom longer, set more fruit in proportion to the number of apparently perfect flowers, and held their fruit better than any other trees on the Station grounds. This is the most effective means of winter protection tried at the Station, but it is probably too expensive for commercial orchards.

"VII. Whitening the twigs and buds by spraying them with whitewash is, on account of its cheapness and beneficial effects, the most promising method of winter protection tried at this Station.

"VIII. Whitened buds remained practically dormant until April, when unprotected buds swelled perceptibly during warm days late in February and early in March.

"Whitened buds blossomed three to six days later than unprotected buds.

"Eighty per cent of whitened buds passed the winter safely, when only twenty per cent of unwhitened buds passed the winter unharmed.

"IX. Thermometers covered with purple material registered, during bright sunny weather, from ten to over twenty degrees higher than thermometers covered with white material of similar texture, thus indicating that whitened peach twigs might be expected to absorb much less heat than those which were not whitened."

As the question of the winter killing of the fruit buds of the peach is a matter which interests many of our own fruit growers, I desired to be in a position to state whether the results obtained by Prof. Whitton could be repeated here or not. But not having any peach trees at Ottawa on which to try the experiment the test was confined to plums, cherries, and apples.

The number of trees used were: Plums, 5; cherries, 3; apples, 6.

Whitewash was made by using unslaked lime, skim-milk, and water in the proportion of:

Skim-milk	6 gallons
Water	24 "
Lime	60 pounds

The lime was slaked in warm water and the remainder of the liquid added. It was then strained through a one-twelfth inch mesh, and was ready for use. As the experiment was not on a very large scale, a hand pump, the Spramoter Jr., was used with a Bordeaux nozzle, which worked very satisfactorily. The first spraying was given on 16th February, and successive spraying were made on 21st and 25th February, 1st, 10th, 13th March, and 1st April, six in all, the objec

being to keep the trees pure white from top to bottom until warm weather came in the spring.

The following notes were taken at intervals from the latter part of the winter until warm weather :—

Plums.—April 5th: No apparent swelling of the buds on either sprayed or unsprayed trees.

April 15th: No apparent swelling of the buds on either sprayed or unsprayed trees.

April 20th: Buds on unsprayed trees very slightly swollen; buds on sprayed trees still apparently dormant.

April 24th: Buds on unsprayed trees of Americana class slightly swollen; on sprayed trees, just perceptibly. Buds still apparently dormant on sprayed and unsprayed trees of Domestica class.

April 29th: Flower buds on American plumbs now showing quite generally on unsprayed trees, a few flower buds showing on sprayed trees, but difference very decidedly marked, not so much swollen. Buds on unsprayed European plums just starting perceptibly. On sprayed trees still apparently dormant.

May 2nd: Flower buds now exposed on both sprayed and unsprayed trees, but difference more marked than before. Greater contrast in buds on unsprayed and sprayed trees of European plums. Buds on sprayed trees have only swollen slightly.

Temperature was above 80° F. on 30th April, and 1st May and 2nd May, causing rapid swelling of buds. It would be impossible now to keep buds covered with lime unless sprayed every day.

The dates of blooming of the plums sprayed and unsprayed were:

Jessie (American), unsprayed .....22nd May.
" " sprayed.....24th May.
Early Red (European), unsprayed.....13th May.
" " sprayed..... .22nd May.

A considerable number of blossoms on the Jessie plum were killed by the whitewash, but the plums on the sprayed trees were larger than on the unsprayed, and there was the same quantity of fruit on it as on the unsprayed tree. The two trees were about the same size.

There were only a few blossoms on both sprayed and unsprayed trees of the Early Red plum. There were about the same number of blossoms on both trees.

A tree of a hybrid between the Sand Cherry and the American plum in the Director's garden was sprayed with the whitewash and a considerable number of buds were killed by the wash.

Cherries.—April 5th: Buds on unsprayed trees swollen very slightly; on sprayed trees, still apparently dormant.

April 15th: Buds on unsprayed trees swollen slightly; on sprayed trees still apparently dormant.

April 20th: Buds more swollen on unsprayed trees; on sprayed trees, just starting to swell. A tree, part of which was sprayed and part unsprayed, has buds more swollen on unsprayed than on sprayed parts.

April 24th: Difference between sprayed and unsprayed cherry buds very apparent now.

April 28th: Still greater difference between sprayed and unsprayed buds, though sprayed have swollen considerably.

May 2nd: Still a marked difference between sprayed and unsprayed.

There were no flowers on either sprayed or unsprayed trees. There was no apparent injury from the use of the whitewash on the trees.

Apples.—April 5th: Buds apparently still dormant on unsprayed and sprayed trees;

April 15th: Buds apparently dormant on sprayed and unsprayed trees.

April 20th: Buds on unsprayed trees very slightly swollen on the 20th; on unsprayed trees no perceptible swelling is noticed to-day. Buds of sprayed trees still apparently dormant.

April 28th: Buds swollen slightly on both sprayed and unsprayed trees.

May 2nd: Buds are still only slightly swollen on sprayed and unsprayed trees; no apparent difference.

The results here given are sufficient evidence of the fact that the retarding of the swelling of the buds was quite marked on trees of plums and cherries. The difference in the dates of blossoming was slight in the American variety but greater in the European. A considerable number of the blossoming buds of plums were killed by the whitewash. As the buds on apple trees do not swell until late, the whitewash appeared to have little affect in retarding the swelling of them.

I am not yet prepared to say whether it would be practical or advisable to spray peach trees to prevent winter killing of the buds, but from the apparent effects of the whitewash in ridding apple trees of the Oyster Shell Bark Louse, it is well worth further experiment to determine whether the same results could not be obtained in treating the San José scale on peach and other fruit trees, and in the case of peach trees it might serve the double purpose of retarding the swelling of the buds and killing the scale.

Notwithstanding the thorough spraying which the trees in the orchards at the Experimental Farm have received, the Oyster Shell Bark Louse, which has affected the apple trees for several years, has never been entirely destroyed there. Last spring, all the apple orchard, with the exception of the trees which had been whitewashed, received two sprayings for the purpose of, if possible, destroying this pest. Careful watch was kept for the day when the young lice made their appearance, which the first ones did on the 29th May. On 1st June the trees received a spraying of tobacco water and whale oil soap, made by using ten pounds of tobacco and two pounds of whale oil soap to forty gallons of water. Specimens of the young insects were examined under the microscope and where found to be dead within an hour of the time they were sprayed. On the 6th June the trees were sprayed a second time with whale oil soap, eight pounds to forty gallons of water. This was supposed to kill anything that was left. Although their number was much reduced, there must have been a considerable number escaped, as healthy scales were found in the orchard later in the summer.

But to return to the whitewash: It will be remembered that these trees were not sprayed in the spring when the trees were treated for the louse. What was my surprise during the summer after the whitewash had come off to find the trees practically free of the bark louse. All the old scales had disappeared, the bark of the trees was bright and clean, and had altogether a healthier appearance than those under otherwise the same conditions. Now none of these trees were examined for bark louse before they were sprayed, but considering the fact that the remaining 72 trees of Wealthy, 31 of Duchess, 26 of Tetofsky are all from slightly to badly affected with old scales.

There is, I think, ample evidence of the wonderful effect of the whitewash on this insect.

Experiments are now in progress at the Farm to determine, if possible, the best time to whitewash the trees to get the best results, the number of applications necessary, how long before the whitewash takes effect, and any other point which may come up. It is proposed to try some experiments in some orchards affected with the San José scale, to see what effect it will have on that pest. I hope to be able to communicate the results next year.

The use of lime in whitewashing the trunk and large limbs of trees is an old custom and still adopted by a few. It was supposed to be a cure-all, and I have not been able to learn just what effects it really had.

Lime was recommended by Forsyth in 1802 for the destruction of Aphis and Red Spider. His formula was:

Unslaked lime	½ peck.
Water	32 gallons.

It was applied by means of a syringe.

Air-slaked lime is used successfully in destroying slugs on the foliage of trees.

Lime was recommended in 1850 against the curculio of plums by Lawrence Young, Louisville, Kentucky, and it was said to have been used successfully by him. "It consists simply in covering the young fruit as soon as danger is apprehended with a coating of thin lime wash, considerably more dilute than the mixture used in whitewashing."

In Bailey's Horticultural Rule Book we find lime spray recommended to prevent the attacks of the Rose Chafer. The formula reads: "Slake one-half peck, or a peck, of lime in a barrel of water, straining the lime as it enters the barrel, to prevent its clogging the pump. Apply in a spray until the tree appears as if whitewashed."

Nowhere have I found that trees have been whitewashed for the purpose of killing scale insects.

Prof. SAUNDERS: I have much pleasure in supporting what Prof. Macoun has told you with a remark or two as to the conclusions reached by myself from very careful examination of those trees which were operated on with the whitewash. We have suffered for a long time at the Central Farm with Oyster Shell Bark Louse, and they work persistently at it every year with the hope of getting clear of it, but have not been able to get our trees entirely clean. During the past year Mr. Macoun has made a strong effort with tobacco to rid the orchard of this pestiferous scale, and I think has succeeded with a great many trees in almost entirely removing them; but I was very much surprised on examining those trees which had been sprayed with lime to see how thoroughly the work had been done, and when the lime was washed off and all the scales, old and young, were entirely removed, and I failed to find on several trees examined anything in the shape of scale left. This whitewash was not applied with the idea of removing the Oyster Shell Bark Louse, but rather to ascertain how far the whitewash would delay the opening of the buds; but the incidental result is most surprising and most gratifying to me, and I hope it will be tried in those sections of the country where the San José scale is abundant, and we shall hear something further as to whether it may not be useful in this way. The complete covering which the lime gives to the twigs is, as Mr. Macoun has very well said, easily seen, and it is so complete that it must prevent the access of air to the scale. It will also, because of its caustic nature, have a penetrating effect on the scale itself; and I am hopeful that we shall find in this lime application not only a thorough application for the Oyster Shell Bark Louse, but also a remedy which will be useful in every case of the scale.

Mr. TWEDDLE: Before we leave this subject I think we ought to have a little discussion on the Codling Moth, and I want to corroborate what the president has said on the point. I believe we ought to make the bands for the destruction of the codling moth compulsory by Act of Parliament, the same as we do with the black knot; and I think in proportion to the amount of work and expense with the bands we get great results. I have about 75 acres of apple orchard this last season with bands on every tree, and I can say that we caught any amount of moths, but we did not save the crop, and that is the trouble, because nobody else in the neighborhood used those bands but Mr. Orr and myself. I think is everybody were compelled to use those bands we could save our crop, or a large proportion of it. I do not see why we should not ask our legislature to pass an

Act on the local option plan just the same as our Black Knot Act, and have municipal councils pass a by-law to force it, on the petition of ratepayers. I should like to see this put in the hands of some of our committees. The winter through, those bands will collect as many as 200 moths to a band. If all of us would do that we would start off with a clean sheet in the spring.

E. D. SMITH: I think Mr. Tweddle is exactly on the right track. My experience has led me to believe that we cannot expect to control the codling moth with Paris green. I have sprayed with Paris green a good many years and this year made a most thorough test under your own supervision.

The PRESIDENT: Up to a given date.

Mr. SMITH: Yes; I sprayed the trees five times under your instructions; and in addition to that, not having confidence in it for the Codling Moth, but having the confidence in the spraying chiefly for the scab—I have great confidence in it for that—I determined to go back to what I had made up my mind to do ten years before the spraying came into vogue, namely, the bandage, and I put the bandages on early. My orchard has been clean for twenty years, and the trees were scraped clean, so there was no place for the Codling Moth to go but under these bandages. The bandages were put on early and inspected once a week all summer. The consequence was that when the apples were about the size of walnuts we found no Codling Moth, hardy could find a specimen in the orchard, and thought we should have perfectly clean apples. Later on, however, I found some moth under those bandages, and they were killed once a week, but not in great numbers—from five to twenty a week under each bandage would be about the average Now, there was not a Codling Moth that came in those bandages but what was killed. The spraying was done thoroughly, and up to the time the apples became the size of walnuts no Codling Moth could be found; but what was the consequence? At the end of the season we found from three-fourths to seven-eights of our apples with worms in! Now where did they come from? The only conclusion I could arrive at is that they came from the neighbor's orchard across the road who did nothing, neither sprayed nor put bandages on. Is it not discouraging, then, for a number of men to continually go to this expense, spraying and bandaging their trees, if it is going to be of no avail because a neighbour's orchard across the way is neglected? I cannot see any remedy except that suggested by Mr. Tweddle, that under a local option, just like our Yellows and Black Knot Acts, a law be put in force in the township. It is no great expense or hardship; it is surprising how little it costs. If these bandages were put on a ten acre orchard the only cost is the labor of one man one day to take them off and examine them and kill the worms. That, conducted for five weeks, would only be a matter of $5 on a ten acre orchard, aside from the initial expense, which does not amount to very much either. These bandages would last many years. I think there is a great deal in Mr. Tweddle's suggestion. It is the only solution I can possibly see of the Codling Moth.

Mr. TWEDDLE: Some eight or ten orchardists used bands, and every man said they were the best preventive they ever saw; they all believed in them and they believed it would be a good thing to make it compulsory.

Mr. CASTON: What did you use for bandages?

Mr. TWEDDLE: Just this rough canvas. (Shown.)

The PRESIDENT: There is one that has been used a year.

Mr. TWEDDLE: We sprayed with half a pound of Bordeaux mixture to forty gallons of water and we found one in four of the Codling Moths dead. It did not prove effectual enough; but with all the bands the Codling Moths came from somewhere else. We had an orchard just like Mr. Smith's. Up till the middle of August you could not find a moth in them, but the last of the fruit so multiplied them that they spread all over. At one orchard on the lake shore we took out

43 barrels of No. 1 ; 100 bushels were effected by the moth, just about the best of the fruit.

A MEMBER: How do you use the band ?

The PRESIDENT: Roll it around the tree as a bandage and tie it with binder twine. It is just the harbor that they want. In regard to Mr. Smith's orchard, I might say that in my last year's report I said I purposed taking some orchards and carrying on the spraying with the Paris green right up to picking time to see what results we would have ; but the Department decided the work should not go on the latter part of July and August, so that put an end to that. Mr. Smith says that up to the time the apples were a little more than half grown there was not a sign of Codling Moth Up to that time he had been spraying. Now if his neighbors supplied all the Codling Moth that destroyed all the crop later they certainly would have supplied some to damage the early crop. What we should do is to continue spraying right up to the time of picking. We know that the Codling Moth is working right up till the apples are picked, because we find the young worm just hatched even after the apples are picked, which shows that the egg could not have been laid more than two weeks at most. To make a thorough test of it I am satisfied we will have to continue spraying right up to the time of picking.

A MEMBER: Would it not remain on the apple ?

The PRESIDENT: I do not think so; not to do any harm. I never saw a case where it would have the slightest effect in that way.

Mr. JONES: A person could continue the Bordeaux mixture and not the Paris green.

The PRESIDENT: There will be no need of continuing the Bordeaux mixture, just the Paris green. While we are badly infested with Codling Moth in the southern section, in the northern section they have only one brood, and the regular experimental spraying almost controls it; but the Oyster-shell Bark Louse, from the Ottawa River right through to the back of the Province, is exceedingly bad, probably ten times as bad as it is with us at the front I think we must have some parasite in the southern section that destroys the Oyster-shell Bark Louse, but in the northern section it seems they have not any. I saw full-grown apple trees at Shelburne killed with the Oyster-shell Bark Louse. If it can be killed by spraying with lime it will be a great boon to this country and and to apple growers. We will be very glad to know more of the experiments and results.

Mr. CASTON: I believe that the application of bands on the trees is one of the best methods that can be adopted for keeping the Codling Moth in check. I believe we have two broods in the more northern section, and they travel around a good deal seeking shelter for the winter, and also the larvae travel around seeking a place to breed. I accidentally made a little experiment in that line. I had a piece of canvas that was used for a bed of onions, and when I was through with it I accidentally placed it in a Pewaukee tree that stood there—just a young tree beginning to bear, with only half a dozen apples on it: and later on in the fall, I think in November, I saw that piece of canvas still in the tree and thought I would examine it, and found either 32 or 34 moths in that. Now, they did not all come from that tree, and it stood at a considerable distance from the other. They could not have come from that tree, because there were only three or four apples on it, and if I recollect rightly I think most of them were sound. So it shows they travel a considerable distance, and they had gone up three or four feet from the ground and made their nest in the rag, and 32 or 34 had settled there for the winter. It would be a good plan to have a bandage that could be removed rapidly, and have a kettle of boiling water and a fire in the orchard, so that the bandage could be removed and dipped into the scalding water ; we would then have in our hands one of the most effective means of dealing with this pest. It is a lamentable

thing to have to throw first-class apples among the culls because of two or three worm holes. I was very much gratified to hear about the excellent results of spraying with lime with regard to the Oyster-shell Bark Louse. If that fact alone is established it is worth probably half the cost of the Experimental Farm at Ottawa to the fruit growers of this country. (Applause.) It is going to be a grand thing, and I will tell you why. In the northern sections we have the Oyster-shell Bark Louse very bad. I find no difficulty in dealing with it on the trunks and limbs of the tree where it can be reached, because I make it a practice to go over the trees with the alkali. I use lye strong enough to float a boat, and dilute it with water, one part to six. For smaller trees I dilute it still more. I make it a practice to scrape off the bark on the bearing tree and give them a drink of that lye once in two years, and that effectually removes the Oyster shell Bark Louse and has a good healthy effect on the tree; but they spread themselves over the tree where you cannot get at them. I use an old birch broom for that, and it has a good effect as far as you can reach them, but away out on the twigs you can't get at them with anything of that kind. Now, if this spraying with lime will remove them, and we have good evidence that it will, I think that that is a very valuable fact itself to the fruit-growers of this country. In regard to the Bordeaux mixture I have used it for potatoes, for rot and for Colorado beetle, and found it was just as effective when mixed with lime as with Paris green. Some of us might like to try experiments this winter along the line of lime spraying. When should we do it?

Prof. MACOUN: My impression is the best time would be toward spring, because the Scale at that time would be getting softer if the weather were at all mild. At this time of the year the Scale is probably harder than in any other part of the year, except perhaps the latter part of February. I should imagine the best time would be from the end of February until the bud starts to swell. I would not like to risk it after that, because I do not know what affect it would have.

Prof. SAUNDERS: What time was your spraying made?

Prof. MACOUN: On the 10th or 15th February. I may say my experiment at the farm is in this way: I am trying some trees with one application of lime others with two, others with three and others with four applications, because I want to find how much lime it takes to kill those insects. It may be that they are smothered, and if so it will take considerable time to do it. If it is the caustic nature of the lime two applications will be enough, because you can get a tree covered with two applications. I thought of discontinuing till about February and then starting and going on till spring again with four or five or six applications, to find out just how much lime it would take. In regard to the San Jose scale, it seems to me quite possible that if there was a thick enough coating of lime on the peach trees just when the young insects come out in the spring, they would not have anything to feed on, and it is possible they would die of starvation.

Mr. CASTON: You have not found the lime affect the tree injuriously?

Prof. MACOUN: Not the apple trees. On the Duchess we have the best crop on one tree that we sprayed, and the trees had a much healthier appearance this summer.

Mr. SPOHN: Would a brush do as well as a spray pump?

Prof. MACOUN: You could not do it on the tops of the branches.

Mr. SPOHN: Suppose they were small-sized trees?

Prof. MACOUN: I don't think they could do it fine enough with a brush. It needs to be spread as fine as possible so as to get in all the cracks.

The PRESIDENT: I would like to ask Prof. Saunders how far he thinks the Codling Moth will pass from one orchard to another?

Prof. SAUNDERS: I think it quite possible for the Codling Moth to travel many miles. It is a very active insect when on the wing. I have often watched them in flying, in the house particularly. They do not usually fly to light, in the way some other moths do, but occasionally one finds a specimen in the house, and I have been struck with the wonderful power of flight they have for so small an insect, and how long they will keep on the wing, and how active they are. So I do not think there is any doubt that they will travel a mile or two seeking suitable locations for depositing their eggs. Of course the instinct to search and find suitable locations for depositing the eggs is very strong in all the moths, and many of them will live under the most difficult circumstances for days until they have deposited their eggs, and they will exert themselves to their utmost to find a suitable place to put them.

The PRESIDENT: This tree from which we took off over 600 this year, is an isolated tree. There are orchards near by that have never been treated. and I think it must have been largely infested from those orchards. Now, if that is the case it is useless for one man to spray and bandage unless his neighbor does it, or has to do it, and I think this matter of legislation might be taken up—a committee appointed to investigate and at least look into the matter. Do you think such a thing would be feasible?

Dr. SAUNDERS: We know the Black Knot law is not very well carried out. It is not wise to have too many laws that are inoperative. If it could be made a matter of option in different counties, as has been suggested, I do not see why it should not be made of very great use. In regard to the larvæ you found under the bandages, they must all come from a reasonable distance from the tree on which you found them. I do not think it would be possible for a larvæ of that character to travel anything like a mile looking for a location on which to go into chrysalis; they would not likely travel half that distance. Probably 100 yards would be as far as they would go. They do not begin to seek a hiding place until they are fully grown, and they usually take the first good spot they find to change into chrysalis. They are active mainly at night, and they crawl about then in search of a suitable spot; and in the case reported by Mr. Caston, where there were so few apples, on the tree, no doubt these larvæ came from some other trees in the same orchard.

Mr. CASTON: Suppose we have very clean cultivation in our orchard?

Dr. SAUNDERS: That does not affect them; they can get over all the quicker if it is clean. They will not go into chrysalis on the ground as a rule. They want the crevices in the bark on the tree to make their change, and that is what they look for, and in that case they travelled from some of your other trees, dropped on the ground in the fruit, or dropped sometimes before the fruit matured, by means of a thread, and then they travel about until they find a suitable locality.

Mr. CASTON: They must come a distance of 200 trees.

Dr. SAUNDERS: Yes, they could easily travel that, or at least 200 yards.

Mr. TWEDDLE: That just makes the matter all the more necessary. The trouble is that the moth comes and lays the egg, and the egg hatches and goes through the process before you can catch it at all, and that is where the difficulty comes in. We would like other people to catch them before they get into our orchards.

E. D. SMITH! What Mr. Tweddle just says is important. It is evident in my own case from what I caught under these bandages that there were not very many, and there were apparently none in the apples; I caught them all that were off my own orchard, but the apples had eggs laid in them from somewhere else. These were flying moths. They were hunting apple trees with apples on, and, as Prof. Saunders says, they fly quite a distance. They could easily fly across the road to a neighbor's orchard and lay their eggs there. I think it is

high time we took some action in this matter. Prof. Saunders says the Black-Knot and Yellows Act has not been very successful. Well, I believe not in many places, but in our township and others where fruit growing is carried on in a large way, and the fruit growers are interested in the matter, it is carried out. All that is necessary is that twelve ratepayers go to the council, and they must appoint an inspector, and on the report of that inspector any one who has his orchard infested with this must destroy the trees. I believe if the same option were given to the township of Saltfleet we would take advantage of it and every tree in the township would be bandaged, and then we would see whether the Codling Moth would not be eradicated.

A committee was then appointed to deal with the matter, consisting of Messrs. J. Tweddle, E. D. Smith, W. M. Orr and A. H. Pettit.

NEW HARDY FRUITS FOR MANITOBA AND THE NORTH-WEST TERRITORIES.

By Dr. Wm. Saunders, F.R.S.C., F.L.S., Director Experimental Farms Ottawa.

During the past twelve years, since the Dominion Experimental Farms were established, persistent efforts have been made to find some hardy varieties of apple which would endure the climate and bear fruit in the Canadian North-West. Varieties have been brought from all the northern Countries in Europe where apples are grown and all the different sorts obtainable which have originated in the north-western parts of the United States have also been carefully tested. In this way more than 200 varieties have been tried, some in the open and others with different degrees of protection and shelter, but none have succeeded. While it is possible some seasons, where special shelter and protection are available, to grow in Manitoba the Transcendant and Yellow Siberian Crabs and a few of the hardiest sorts of Russian apples, this has only been done under very exceptional conditions and in localities where the altitude above sea level is not great. All attempts to grow these varieties in a general way under such conditions as are available to the average farmer have resulted in failure, and the conclusion has been forced on us that notwithstanding the few partial successes which have been recorded, that the growing of the hardiest sorts of apples at present available in a general way in that north-west country is quite impracticable.

Experiments were early tried with the wild crab apple of Ontario (*Pyrus coronaria*) thinking that possibly from this source some hardy and useful sorts might be obtained, and several hundred seedlings were raised at Ottawa from seed collected from wild trees in Ontario. These were sent to the experimental farms at Brandon and Indian Head and planted there under different conditions as to shelter. A few of them survived in a partly killed condition for a year or two and then died out. Experiments were also tried with seedlings of another wild crab known as the Berried Crab (*Pyrus baccata*) the seed of which was obtained from northern Siberia, and the young trees grown from this seed have proved entirely hardy at both the western experimental farms and have started each spring from the terminal buds on their branches since they were planted. They have also borne fruit, but this has been so small as to be of little value.

In the spring of 1894 this small wild crab was crossed with several varieties of hardy apples such as Tetofsky, Wealthy and Duchess, also with some of the larger crabs, including Transcendant, Orange and Hyslop. From the seeds obtained from this work of crossing, young trees were grown which when one

year old were planted in a small orchard. They have grown very rapidly and have made handsome young trees more or less pyramidal in form and branching close to the ground. During the past season thirty-six of these cross-bred sorts have fruited and some of them have borne heavy crops Among these there were five which produced fruit of such size and quality as to warrant their being named and propagated for more extended trial. The fact of their having fruited so freely on the fourth year from the sowing of the seed indicates a prolific and early bearing habit. The names and descriptions of the five selected varieties are here given in what is believed to be the order of their merit.

Charles.—A cross of Pyrus Tetofsky on *Pyrus baccata.* Tree a very upright and vigorous grower with large leathery leaves of considerable substance. The blossoms are deep pink in bud, pinkish white when open, large, with wide petals. The fruit set well and was distributed very evenly over the tree. Ripe Sept. 3rd. Size, 1 9-16 inches across, 1 6-16 inches deep, very distinctly ribbed. Colour a uniform yellow, very attractive. Flesh, yellow, solid, crisp, juicy, very mildly acid and very mildly astringent. Flavor pleasant, skin rather thin, bakes well. When compared with the Transcendant crab the size was practically the same, the acidity and astringency a little less. Stem long, calyx persistent.

Novelty.—A cross of Wealthy on *Pyrus baccata.* Tree fairly upright in habit and a vigorous grower, with good foliage. On this tree there were only a few bunches of blossom, which were deep pink in bud, white when open, flowers large, petals broad. Fruit ripe Sept. 19th. Size, 1½ inches across, 1¼ inches deep, smooth. Colour, deep red. Flesh a pale yellowish pink, firm, crisp and juicy, sub-acid and of fair quality. Stem long, calyx unusually persistent. Bakes well, quality when cooked very fair. The largest and best of the Wealty crosses which have yet fruited.

Aurora.—A cross of Tetofsky on *Pyrus baccata.* Tree a vigorous grower, upright in habit, with large thick leathery leaves. Blossomed freely. Flowers deep pink in bud, large when open, pure white, petals broad. Fruit sat freely and was ripe September 11th. Size, 1 7-16 inches across, 1 3-16 inches deep. Colour bright red almost all over, very pretty. Flesh crisp, juicy, acid and of fair flavor, astringency very slight. When baked this fruit is acid, but of good flavor. Stem long, calyx persistent.

Progress.—A cross of Wealthy on *Pyrus baccata* The tree is a vigorous grower and fairly upright in habit. It blossomed freely; the blossoms were deep pink in bud, pinkish white when open, flowers large, petals wide. Fruit ripe September 14th. Size, 1 5-16 inches across, 1 3-16 inches deep. Colour red, with some yellow and a dark red cheek. Flesh very firm, crisp, juicy, sub-acid, astringency scarcely perceptible, of fair flavor. Stem long, calyx persistent.

Prairie Gem.—A cross of Tetofsky on *Pyrus baccata.* This tree is a moderately vigorous grower and rather spreading in habit. It was heavily laden with fruit from top to bottom. The tree was covered with blossoms, which were pink in bud, white when open, of medium size, with petals of medium width. Fruit ripe August 30th. Size, 1 inch across and one inch deep. Color, brilliant yellow and crimson Flesh crisp, juicy, acid, flavor good, almost free from astringency, excellent for jelly. Deficient in size of fruit, but promising for its earliness, quality and profuse bearing habit.

All these varieties are remarkable for the persistent manner in which the fruit is attached to the tree, The stems are so firmly fastened that they require a considerable effort to detach them. The trees are all very strongly built, with the branches bound to the trees with bundles of woody fibre which are difficult to break. Root grafts were made of some of these varieties two years ago on account of their thrifty growth and promising appearance and sent to the western experimental farms where they have stood the test of one winter; a further supply was sent for the same reasons last spring. Now, that these five have fruited and

promise to be of value, they will propagated more freely and tested in different parts of the northwest country. There seems every reason to expect that they will prove hardy, and if they can be grown by the average farmer there under ordinary conditions, they will undoubtedly be much appreciated.

As the five varieties described have all been selected from the first 36 of these crosses which have fruited, it is probably many other equal and possibly superior sorts may be found as other cross-bred sorts come into bearing. The work of cross-fertilizing has been continued and there are yet 270 of the crosses on *Pyrus baccata* which which have not fruited. These include crosses with Duchess, Yellow Transparent, Wealthy, Simbirsk, Oeimoe, Kursk Anis, Krimskoe, Herren, Pewaukee, Tetofsky, McIntosh Red, Excelsior, Broad Green, Haas, Scott's Winter, Ribston Pippin, Red Astrachan, Anis, Talman Sweet, McMahan White, Red Anis, Swayzie Pomme Gris, Fameuse and Beautiful Arcad.

A number of crosses have also been made on another wild form of Siberian Crab *Pyrus prunifolia* which produces fruit naturally of nearly double the size of *Pyrus baccata*, and its hardiness has been established by tests of several years at both of the North-west experimental farms. The first crosses were made on this species in 1896, and the seed germinated in the spring of 1897. The young trees grown that year were planted out in orchard in the spring of 1898 where most of them are growing well. The number of these crosses are about 200 and pollen was used for crossing from the following cultivated fruits: Red Astrachan, Duchess, McMahan White, Simbirsk, Herren, Pewaukee, Haas, Golden Russet and Winter St. Lawrence. The extra size of the natural fruit of *Pyrus prunifolia* will, it it hoped, result in the production of cross-bred fruits of larger size.

The result here reported are but the first steps in a series of experiments which are full of interest, and promise to be of much value to the settlers over large areas in the Dominion. The seeds obtained from the most promising of these crossbred sorts are being preserved and sown and from them many interesting sports may be looked for. Now, that the continuity of nature has been broken by the work of cross-fertilizing it is proposed to carry on selection with seedlings of these crosses from which fruits of increased size and improved quality will probably be obtained. From these sources it is expected that within a few years a number of useful sorts of apples will be had, ripening at different periods which will endure the climate in most of the settled parts of the north-west country.

Last year I ventured to say that no success had been had in growing the larger fruits there in the Northwest, such as apples. During the past year, however, you will have noticed paragraphs announcing the fact of the ripening of numbers of apples of Russian varieties at different points in Manitoba, and this seemed quite contrary to the statements which I made to you last year. I took pains when in Manitoba this year to investigate this unusual condition of things. I visited Mr. Stevenson, who has had most success. His farm is at Nelson, six miles from Morden in the southern part of Manitoba, and he is at an elevation of about 700 feet above the sea, and in an exceptionally sheltered spot. He had ten or a dozen small apple trees, the trunks of which would probably measure four or five inches in diameter and standing ten or twelve feet high, on which there were a good many specimens of well-known Russian varieties of apples. It is the most successful year he has ever had, but his place is sheltered by a dense mass of wood on two sides, preventing any cold winds from reaching him, and his orchard itself is grown up. The trees are planted between every two or three rows of trees. There is a row of evergreens that are nearly as tall as the trees, so that in order to see the trees you have got to get right in amongst them they are so much sheltered. Mr. Stevenson remarked to me, "I know I have succeeded in growing apples here better, perhaps, than anybody else in Manitoba, but I doubt if anybody outside my own place, unless he had equally good conditions, could get the same results as I have got." When I arrived at Brandon I found

some very nice samples of apples which the Archbishop of Rupert's Land had sent up from Winnipeg, and he gave the details of how many apples he had to each tree, varying from 5 to 55 apples on the tree. This surprised me very much, but on my return I spent a day in Winnipeg to see how it was that apples had been so successfully grown at this point. On visiting the Archbishop's garden I found it also on the banks of the Red River, very exceptionally sheltered with woods on the north and west sides. It also was enclosed with a high board fence and when I came to examine the trees, I found that the fruit had all been borne below the snow line—that is, that the wood all above the snow line had been killed, and the apples had all been matured within about three feet of the ground. The trees had made a rapid new growth above where the fruit had been, but the results satisfied me notwithstanding fruit had been grown there and ripened under those exceptional conditions, that as a general thing people could not grow these varieties of appies under ordinary conditions of exposure. I thought this statement was needed in view of the statement I made last year, and which seemed to be contradicted by the reports in the newspapers.

Mr. CASTON: Were those dwarf trees?

Mr. SAUNDERS: They were dwarf, but I do not think they were what we call dwarfs. They were dwarfed by the weather. We have had similar experience to that in Brandon, as far as dwarfing the trees is concerned, but we have not matured any fruit on the trees. Every year for ten years they have been killed down to within two or three feet of the ground. In this case of the Archbishop's the tree had carried the buds through and matured the fruit the following year, but all the fruit buds were below the snow line, and the high board fence would help to collect the snow. There would have been three or four feet of snow in that garden in the winter; and practically it does not do away or lead one to modify the general statement that such fruits cannot be grown in that country under ordinary conditions. The further remarks I wanted to make relate to the new hybrid fruits suitable for growing in the North-West. I have still one more cross to bring to your notice, and that is the cross between the Sand Cherry and one of the wild American plums known as Colonel Wilder. The Sand Cherry most of you know well, and you will observe that this fruit, which is intermediate in the character of its foliage between the Sand Cherry and the plum, is also intermediate in size between those two fruits. The quality of the hybrid is much better than the Sand Cherry, and it may possibly be a useful fruit for the North-West. At any rate it is interesting as a scientific development of the work of cross-fertilizing, and I believe it is likely to stand the climate of the country and be useful to the people. (Applause.)

Mr. SHEPPARD: You mentioned that in the Archbishop's garden the fruit is borne upon the lower branches that were covered with snow. Has any attempt been made, such as Mr. Smart in New Brunswick carried on for many years with plums there? He raised plums, and laid the trees down over winter—cut the roots on one side and then laid them down and fastened the trees to the ground, and they were covered with snow the whole winter. In that way he preserved the fruit buds and raised large crops of plums. Has that ever been tried in Manitoba on the apples?

Dr. SAUNDERS: Not that I know of anywhere. The orchard of Mr. Stevenson is the only orchard I have seen where fruit has been borne above the snow line, and that success is no doubt attributable to the remarkable shelter which he has. I remember visiting Peter Gideon, lately deceased, several years ago. His orchard is on Lake Montaunk, not a very long way south of Brandon, and I saw some peaches there which he had succeeded in raising by adopting that method. He pulled me one off to try, and I had a chance to eat it while I was there, and it was a very well-ripened and good-flavored peach which he had succeeded in producing by adopting that plan; but we have never tried the experiment on

any of our North-West farms, for the reason that not many of the trees we ever planted there have lived more than one season, and there has not been the opportunity of carrying out experiments of that nature—generally been killed out root and branch. It is necessary to have these roots perfectly hardy. For that reason we have raised no stocks from the Pyrus Baccata seed.

MANITOBA AND THE NORTH-WEST TERRITORIES AS MARKETS FOR ONTARIO FRUITS.

Dr. Wm. SAUNDERS, director of the experimental farms, addressed the Association on this subject. In 1888 he first brought this topic before the fruit growers of Ontario in a paper which was presented at the annual meeting of the Association held at St. Catharines in December of that year. In that paper many facts were presented bearing on the extent and promise of the western market for the surplus fruits of Ontario. With a considerable and steady increasing population spread over an area of 1,000 miles in length and from 200 to 300 miles in width, with a number of well established cities and towns and with many new towns and villages springing up all over this vast district, the consumption of fruit is already very large and is increasing with amazing rapidity. Suggestions were made in that paper as to methods of packing and handling of fruit so that it might reach its destination in good condition, and if this could be accomplished a growing demand for Ontario fruits would follow.

Dr. Saunders then referred to what he had seen during his journeys through the north-west country this year and spoke of the improved condition in which Ontario fruit had reached that distant part of our country. He found in all the places he visited abundant supplies of Ontario grapes which were largely taking the place of the California product, hitherto the chief supply. These eastern grapes had reached the market in good condition, were keeping well, and were selling in large quantities at reasonable prices as compared with the past, but still at such figures as would give fair profits to the growers and the dealers. Ontario apples were also well distributed and some fine cases of Ontario grown pears were seen in some of the larger towns. The dealers all spoke well of the fruit, it had in most cases reached them direct in car load lots in excellent condition. On enquiring he learned that over 200 car loads of Ontario's surplus in this line had found a ready sale in the far west during the season and the market was not by any means glutted. With such material to dispose of, much of which is very perishable, he advised that Ontario shippers make business connections with the dealers in different towns and ship direct to them in carefully packed refrigerated cars as often as required. Fruit so supplied can as a rule be offered to the consumer in much better condition than if shipped to one or two business centres and thence distributed. The less such perishable material as fruit is handled and the shorter the time occupied in transporting it from the grower to the consumer the more profitable and satisfactory will this important business become.

HOW CAN WE PREVENT TRICKERY IN PACKING OF APPLES FOR EXPORT?

A. H. PETTIT: We have considered this matter for a time, and we would adopt the suggestion given us by Prof. Robertson, but the details of the scheme is something that we should not hurriedly put through. However, we think for

this meeting the suggestions made by Mr. Robertson this morning might be fully and thoroughly discussed, and the committee later on, after hearing the full discussion on the suggestions made, would probably be in a position to make a report that would be of value to this Association. There is one point in which we do differ for the present in regard to Mr. Robertson's suggestion, and that was that it would be unfair to place the grower's name upon the package over which he has no control. (Hear, hear.) The packer's and the shipper's name might fairly be put there, but not that of the grower who sold his fruit to the shipper and placed it outside of his control, as to the condition and quality of fruit contained in the package.

Mr. TWEEDLE: There would be another difficulty right along that line. One of the details of it is that a great deal of fruit is sent away to the warehouse and repacked. I do not see how the owner could be responsible for anything after that.

The PRESIDENT: As I understood Prof. Robertson, the grower was not responsible at all. His name was there merely as a matter of reference, but no responsibility attached to it whatever.

Mr. PETTIT: A great many Canadian growers have a very good name in the British market, and if the shipper was to put the grower's name on it when he had no control of the package, it might ruin his good name in the British market; therefore he must be protected in some way.

E. D. SMITH: In discussing this in the few minutes we had at our disposal at noon in the committee we felt the suggestions of Prof. Robertson were on the right line, and had struck a solution of the difficulty we had never been able to reach before. It had been suggested in other years that a grade of a certain size, say 2½ inch apple, should be regarded as No. 1, and a 2¼ inch apple as No. 2, or something like that, and we felt that that would not meet the difficulty—that we could hardly specify what would be regarded as the size of a No. 1 apple. That difficulty was met with that suggestion to-day, that the minimum size be marked on the head of the barrel. A man might put up whatever he liked, but it must be marked on the head, with an allowance, as he suggested, of ten per cent., which I think would be very reasonable. That part the committee quite agree with. Then they suggested that the grade marks for quality should be Fancy, A1, No. 1 and No. 2—making four grades. That is a matter subject for discussion here. But one thing that we did not attempt to discuss, and felt it would take a good deal of time, is the matter of compulsion—whether everybody should be compelled, who put up their apples in this country, to put their marks on them, or whether it should be optional, that was a matter we could not come to a conclusion upon, for the reason that we should like to hear this matter discussed at this meeting, and give us leave to sit again and report at some future date.

Mr. HUGGARD: I think it is absolutely necessary to have a guide as to what is a No. 1 apple. I understand this committee was appointed for the purpose of designating what would be No. 1, No. 2, etc., acceptable to the Government and to purchasers. In the Toronto fruit market you will see all manner of fruit marked No. 1, when I would call them No. 3 or No. 4, and in some instances something like these in our baskets here, that are not even fit for a cider mill. The very fanciest varieties you have got I would call No. 1, and I should designate apples nearly as large, not so highly colored, with no spots, no worms, no rot, no bruises, all perfectly sound as No. 2.

A. H. PETTIT: As a basis for this, suppose we say that an apple that should rank A No. 1 should be an apple of fair size of the variety it represents, free from scab, worm hole and bruises, and properly packed. Now, I would ask you what size you would put a Baldwin to come under that head? Would you put a 2½ inches, 2¾ inches? These are the little detailed points that we want to first con-

sider before we submit a report as to what will constitute these different grades, taking the various kinds. You come to the Kings, and where will your A 1 be there? Will it be 3 inches or 3¾ inches? These points all want to be carefully considered before submitting the standard to the Association for approval; and you may go on down to the various grades of apples in that way. It would be well if we could adopt a scale and have them stamped on the barrel; and we want your views on the variety and how they would range.

Mr. HUGGARD: I would submit that an A No. 1 extra quality of Baldwin should not be less than 2¾ inches; a King should not be less than 3 inches, neither should a Spy. These would be extra, and colored accordingly. Now, a Spy of three inches in diameter that is all green in color I would not rank as an A No. 1 apple, though perfect in every other way. The color has everything to do with Snows, Kings, Baldwins and all those colored apples. Take a barrel of Spys that there are very few red ones in, and you will not get a very high figure for them. We often see those barrels opened up in Toronto, Montreal and in our local markets, with apples all the way from 1½ inches up to 3½ inches in the same barrel. This barrel could not be graded anything, and it would not sell for very much supposing the apples were all sound, which they are not generally; but take the largest and most highly colored out of those apples and make a grade of them, and take the next and make a grade of them, and throw the smallest ones out altogether, then the buyer and seller would know just what they were worth. If I were a law-maker I certainly would make it criminal for any one to forward such apples as that to any country, or even to our own private market. A baker the other day in our own town came in with his bread wagon to sell bread, and it was reported to the chief constable that the bread was light. He went and tested some 30 or 40 loaves, and the poor of the town had the benefit of the bread at the expense of the baker. If a producer will not put the goods on the market at the price that he has a right to ask, have a standard whereby, both producer and consumer can prove as to its merits.

Mr. BOULTER: While we have a good name for apples in the Old Country it behooves us to see that the packing is carefully watched. We can produce the best apples in the world. The business men down near the Annapolis valley want Ontario Spys and Baldwins. I have always believed that inspectors would remedy the present evils we have to meet. The law in canned goods is that if the name of the packer is not on the package he is liable to pay $2 for every can so put up. $24 for a little case of goods is a pretty serious thing. We have followed that up and punished men for violation of the law. It is the same thing with apples. My theory is to start this thing right. I do not think it is wise policy for a large fruit grower to be a speculator in it. I think you have got started to-day pretty near on the right basis. Prof. Robertson has outlined something from his long experience that is of value. I believe that whoever sells an apple, who is responsible for the sale, as I am for my goods, his name must be there imperatively, and it ought to a statutory law that if he sends goods out of Canada or sells goods in Canada, his name ought to be there as a guaranty of good faith, not put a fictitious brand of any kind. Make the man responsible that puts the article up. Throw the responsibility on him, and make him liable to lose his fruit. If you send a car of goods to British Columbia and they find one barrel infected with worms, they will burn that whole car before your eyes. I was buying peaches in Toronto for three years, and I came to the conclusion there was not an honest peach packer in Canada. (Laughter). I would not like to say that about the peach packer only; I would like to say he had friends among the apple growers.

The PRESIDENT: I am satisfied this committee now will be able to bring in a report.

REPORT OF COMMITTEE ON FRUIT PULP.

By W. Boulter, Picton.

You appointed a committee last year to take into consideration the shipping of our surplus fruit pulp to the old country. I had connected with me Rev. A. J. Andrewes and Mr. Alex. McNeill. I had shipped over some samples last year. In April I went over to England, and the parties who had been writing in regard to this fruit pulp were my own brokers in London, Messrs. Anderson & Coulton, I interviewed them in regard to it. I sent the letter over to our worthy secretary. I am not going to read that letter to you. The question was whether our raspberries could be successfully made into pulp and shipped over. We are not able to make jam in Canada and compete with the Englishmen. The idea is for him to get fruit, as he does, that does not cost him more than 5, 6 or 7 cents a pound. He wants to put as much sugar in it as he possibly can, because he buys the sugar for 1½ d. a pound, and the more sugar he puts in the more profit he makes out of that pulp. I had a talk with my brokers, who had first introduced this subject, and I came to the conclusion it was rather precarious business. However, I came home about the first of June. When I left London the season had not been very favorable, a little too dry; the crop of raspberries was not likely to be very large. I wrote Mr McNeill that I was ready to go on and put up the goods; but I received no reply. I wrote again and received no reply. Mr. McNeill apologised to me that he did not write, and I said, "Well, perhaps you did'nt because under the circumstances you thought the crop was going to be so light that it would not do to make any sacrifices and put it into pulp; you would make more money the way it was." That is about the sum and substance of the business this year; the crop was not so large that there would be any advantage to put it up and ship it to the old country. You heard Prof. Robertson say last year that if certain prices could not be realised there would not be much result. However, I came home and bought up a lot of the Shaffer raspberry. It is not a real good salable raspberry in Canada along side of the Cuthbert, but it makes splendid good pulp, it is good color. I put up fourteen tons of these raspberries into pulp, under the ordinary process, in gallon cans, the same as the gallon apples that you see exposed for sale. The brokers had written me that taking all things into consideration that was the most desirable package to send over. I sent samples of the goods over. The quotation Prof. Robertson gave you was from £20 to £30 per ton of 2240 lbs. The letter I received from the brokers says that the ordinary prices range from £18 to £20 per ton of 2240 lbs., and it was not till something like a week after that it jumped up to £40, sometimes to £50. Well, if we could get £40 a ton a little money would result to the grower of these berries at five cents a quart. However, there have been no such prices as that since we put up the goods. I wrote to Hon. Mr. Fisher, and he said as soon as Prof. Robertson got back he would correspond with me and see what could be done. In conversation with Prof. Robertson to-day he wished me to send over a ton to be distributed among the large buyers. I made the proposition to you to send your raspberries to me and I would put them up at actual cost. It would not have paid you this year to have done it, even to have sent them a mile or two miles from your place of growth, because if you can realise five cents a quart, don't take any chances of putting them up into pulp. It will not pay as the expenses in connection with it are so great and the chances and competition with the Australian, the French, and pulp from other countries naturally keeps the price low. I am holding these goods back simply because we could not get freight space at a reasonable price. The prices in January are likely to be better than they are now, and I shall report the actual result later on. I shall go on and put up goods even next year. Some

goods have been put up and sold for 25 shillings a dozen. The easy way to put these goods up would be in gallon cans, 7 lbs. to the can, which would mean 84 lbs. to the dozen, and the quotation of 26 shillings which I was offered would be for a dozen of those cans—not by the ton. Taking the shilling at 24 cents. the cost, as near as I can make it up, comes to about $4.80—you can be very safe on that—5 cents per pound. The cans and the cases and the ordinary processing and freight would cost at least 2 cents more, which would make 7 cents laid down; so you can easily figure that 26 shillings for 84 pounds would leave very little money. I will say in conclusion that should the crop of raspberries be large next year, and the prices drop, I will do my best to take your surplus stock at a price that will pay you a good deal better than throwing it away. Perhaps some other packer is willing to invest as I have been.

Mr. SERVOS: Could the raspberries be evaporated and then sent to the Old Country and placed on the market there and answer the purpose of pulp?

Mr. BOULTER: No.

Mr. SERVOS: What would be the best course to pursue in order to realise?

Mr. BOULTER: The old-fashioned way was evaporation, or drying naturally. At present I do not know any other way unless you can get somebody who can put them up in these cans in the natural state. They must be sweet when they are put up. You could not make an article strong enough to hold it if it went into fermentation crossing the ocean.

Mr. SERVOS: Would it not be possible to employ some person to come right on the premises and do the work?

Mr. BOULTER: If you had a large quantity.

Mr. SERVOS: Would twenty acres be enough,

Mr. BOULTER: Oh, yes; five acres would be sufficient. What variety are you speaking of?

Mr. SERVOS: These are wild raspberries.

Mr. BOULTER: Yes, that would be a good point. They would make good jam, but you could not get pickers. I tried this. You could not get pickers to pick wild raspberries so that you could make any money and put them up. If you got beyond 4 or 5 cents a quart you could not make any money at the prices I quoted you. If you can sell them at the home market, sell them, if you can get 4 cents a quart nett, do not attempt to do anything else only sell them.

Mr. SERVOS: I had everyone of them sold in Toronto this year but could not get pickers.

Mr. BOULTER: You could not make any money with picking at that price.

Mr. SERVOS: What is a pound equivalent to?

Mr. BOULTER: A pound is an imperial quart.

Mr. SERVOS: They wanted three cents a pound.

Mr. BOULTER: They wanted all there was in it.

After some discussion it was decided that the committee appointed to report on the suggestions of Prof. Robertson be authorized to confer with that gentleman and take such action in the matter as circumstances might require.

MUSHROOMS.

BY REV. DR. HARE, PRINCIPAL OF WHITBY LADIES' COLLEGE.

Mushrooms are a kind of fruit that are not very well known even by fruit growers, and I may tell you that we had baskets full of these mushrooms that were really palatable and nutritious—more nutritious than any kind of fruit that you grow in your orchard—and these were simply wasted, thrown away, because we did not understand that they were edible and nutritious. When you come to

know that mushrooms rank next to meat in nutritive qualities, that they are even more nutritious than peas or beans, then you come to understand that they are an article of diet that we should not despise. The kind of mushrooms that grow in our college grounds are three. There is the common Meadow mushroom that you are all acquainted with. Then there is the larger and coarser mushroom, but very much like it, known as the Horse mushroom. That was found in considerable quantity around our college hot bed. Then there is what is known as the Fairy Ring mushroom. This was rather troublesome in our lawn grass. The grass grew quite green amidst the mushrooms, and it rather spoiled the general appearance of the lawn, and we were doing all in our power to exterminate these mushrooms. I gave instructions to the man to go and destroy them the moment they put their heads above the soil. Now we are glad to see them there, and we go and pick them up, and we find them very nutritious and palatable eating. Then I may say there are two other mushrooms found within the corporation that are really valuable. One is the *Cobrinus commodus*. Some are very much afraid of this simply because it turns to ink when it decomposes. You will find a quantity of that peculiar species in this neighborhood. They are quite plentiful this autumn. They look, when closed, like an umbrella closed, and then when they open out they are somewhat bell-shaped, or like an umbrella somewhat open, and they are rather light colored on the outside, a little dark at the top of the cap, and the cuticle rather splits up into shaggy scales, and it gets the name Shaggy mushroom. The gills are white at the outside, then they begin to turn pink at the edges. It next turns black and begins to decompose, and then it just simply turns into ink and disappears. Then we have in Dr. Waugh's grounds a very fine species of Morell. This mushroom is not known because it is not a gill-bearing mushroom. It looks like a honey-comb on the outside and the spears are developed on the outside of the mushroom instead of beneath the cap on the gills. I may say that in the township of Oro in the county of Simcoe the Morell is very much prized. Dr. Waugh was teaching there some years ago, and he was telling me that it resembled in taste a very tender leg of chicken, somewhat midway between the taste of a chicken and the taste of very delicate lamb. Now, when you find that the percentage of proteids or albuminous matter that may go to build up the system is exceptionally large in these Morells, and that they are such delicious eating, certainly we ought to be able to recognize such friends of ours when we see them. Then I may say that there are no less than four different species of puff-balls found in the college grounds. Some people are afraid of them. Now, there is not a single poisonous puff-ball known to science. All these puff-balls are good to eat if we get them when they are young and white in the centre. If they begin to turn yellow and there are streaks through them, then they are not fit to eat. There is one little puff-ball known as the Calpsin puff-ball; then there is another called the Warty puff-ball that is very common in our college grounds, sometimes three or four together, quite warty on the outside. They are more compact in structure than the first one I have referred to. Then there is a pear-shaped puff-ball and out at Tweedie's woods there are two very fine species of puff-ball known as the Albertum and also the Gigantum Zendiform, that is the January puff-ball. I have in the college museum a sample of the January puff-ball that must have been much over a foot or a foot and a half in diameter. These puff-balls are delicious eating. I have had the pleasure of eating some of them, and thoroughly enjoyed them, and where we could find access to one of these large puff-balls we can simply cut a slice off the upper part of it and serve it for dinner to-day, and then wait and come along the next day and cut off another slice, and the puff-ball will continue to grow, and unless we are very extravagent in our ideas it may continue there for some days and afford us delicious eating. If I had time I would like very much to go into the classification of puff-balls, their structure, their life-history, and

then perhaps to make some drawings that would illustrate what I had to say. I thank you very heartily for the privilege of making these remarks, and I hope that those of you who do find puff-balls in your neighborhood will become enthusiastic. I do not profess to be an expert, but I say this, that I have unbounded interest in the subject, and that the more I learn respecting mushrooms the more enthusiastic I become.

The PRESIDENT: I am satisfied there is no article this country produces so edible as mushrooms. I am very glad the Doctor brought that question up.

PREPARATIONS FOR A DISPLAY OF CANADIAN FRUITS AT THE PARIS EXPOSITION.

BY PROF. SAUNDERS, DIRECTOR EXPERIMENTAL FARM, OTTAWA.

In planning for a representative exhibit of Canadian fruits at the Paris Exposition in 1900 it was necessary to consider the subject from several standpoints. The time of holding the Exposition, from the 5th of April to the 30th October, has an important bearing on the material to be exhibited. The first point to consider was what fruits could be shown in a natural condition within the time named, and how they could best be preserved so as to maintain a continuous exhibit. In this connection, also, it was necessary to consider how the softer and more perishable sorts of fruit could be kept so as to show them of their natural size, form and color.

It was decided to undertake the preservation of the perishable fruits in antiseptic fluids and to secure some of the best specimens of these products from all the more important fruit-growing sections in the Dominion. To this end there have been filled in all more than 1,700 jars. These containers are of various sizes, from one pint to five gallons each, are made of the clearest and finest glass so as to show the fruits off to the greatest advantage.

Of these glass jars 794 have been filled with fruits grown in Ontario; 402 with those of Quebec; 258 from Nova Scotia; a few from New Brunswick, and 28 from Prince Edward Island. Forty-eight have been filled with cultivated small fruits and wild fruits of Manitoba and 31 with those of the North-west Territories, while 188 jars have been received from British Columbia. The following preservative solutions have been used: 1st. A two per cent solution of Formalin in water for strawberries, some of the red raspberries, blackberries and red currants; 2nd. A two per cent. solution of boracic acid for cherries, red and black currants, gooseberries and some varieties of raspberries, also red and black grapes, plums and apples; 3rd. A three per cent. solution of chloride of zinc. which has been found very useful in preserving white currants, white raspberries, and green and russet apples; 4th. A solution of sulphurous acid made by mixing one pint of commercial sulphurous acid with eight pints of water, which has proved an excellent preservative for all light colored fruits. To all these watery solutions ten per cent. of alcohol has been added to prevent danger of freezing during transportation.

The collection of fruits preserved in fluids consists of the following: Strawberries, 137; red, white and black raspberries, 203; blackberries, 27; red and white currants, 177; black currants, 13; gooseberries, 121; cranberries, 9; plums, 208; peaches, 30; quinces, 3; apricots, 2; cherries, 85; grapes, 108; pears, 122. and apples, 455. Most of these latter are early maturing sorts. Additional jars of the later maturing fruits will be filled in Paris from the fine selection sent there to be shown in a fresh condition.

In making selections of fresh fruits, which are being preserved in cold storage n Montreal until the time for exhibiting them arrives, it was decided that the

display in this section should be confined to apples and pears and that our commercial varieties should be made the most prominent feature. It was, however, thought best, in order to more fully illustrate the capabilities of the different climates of Canada, and at the same time make the exhibit more interesting and attractive, that a considerable number of varieties should be secured; but no attempt has been made to preserve any variety earlier in season than the Fameuse. From that period onward, selections have been made of all the most desirable apples and pears which could be obtained. The fresh fruit has all been packed in bushel boxes, the Cochrane case, with a separate paper compartment for each specimen, having been chosen for this purpose. The fresh fruits have been secured from the different provinces as follows:—Ontario, 96 boxes, and nine to follow, Quebec, 130 boxes; Nova Scotia, 83 boxes; New Brunswick, 50 boxes; Prince Edward Island, 24 boxes; and from British Columbia, 68 boxes, making 451 boxes in all, which will probably be increased to about 500 when all the fruits selected are in.

Those received are now in cold storage in Montreal, from whence they will be forwarded in good season to Paris, using, if necessary, cold storage in transportation and placing them in cold storage on arrival there, and taking them out of cold storage from time to time as required for the display. In this way it is hoped that an attractive exhibit of fresh fruit will be provided, giving prominence to all our late keeping winter varieties for two or three months after the Exposition is opened. As the specimens shown cease to be useful for the fresh fruit exhibit, samples will be put in glass jars in antiseptic fluids, so as to add to that portion of the display.

In getting this large and comprehensive collection together, the following gentlemen have rendered excellent service: Mr. A. McD. Allan, of Goderich, Ont., who has had charge of the work for Ontario; Prof. H. L. Hutt, of the Ontario Agricultural College, Guelph, who has undertaken the work of preserving the more perishable fruits brought together by Mr. Allan, and has put up 596 jars; Mr. W. T. Macoun, horticulturist of the Central Experimental Farm, who has put up 161 bottles, containing samples of the fruits grown on the Central Farm; Mr. R. B. Whyte, of Ottawa, who has contributed a nice collection of early fruits from his own garden, numbering 17 specimens; Mr. Robt. Hamilton, of Grenville, Que., who has collected all the fresh fruits from Quebec and put 230 samples in preserving fluids of fruits grown in the western part of that Province; Mr. Albert D. Verreault, of Village des Aulnaies, Que., who has bottled 205 samples, representing the eastern sections of Quebec; Mr. J. W. Bigelow, President of the Fruit Growers' Association of Nova Scotia, Wolfville, has brought together the larger part of the fresh fruit collected in that Province; Mr. C. A. Patriquin, of Wolfville, who has assisted Mr. Bigelow in collecting the fresh fruit and has conducted the work of preserving 89 of the more perishable sorts in fluids; Mr. Thos. A. Peters, of Fredericton, Deputy Commissioner of Agriculture for New Brunswick, who has undertaken the work in that Province; and Mr. J. S. Clark, who has made the collections for Prince Edward Island. Such small fruits as can be grown successfully in Manitoba have been collected by Mr. S. A. Bedford, superintendent of the Experimental Farm at Brandon, who has contributed 48 specimens, and similar work for the Northwest Territories has been done by Mr. A. McKay, superintendent of the Experimental Farm at Indian Head, who has sent 31 sample jars. In British Columbia Mr. J. R. Anderson, Secretary of Agriculture, Victoria, has done excellent work in collecting fresh fruit from the more important fruit growing districts of that province; while Mr. Thos. A. Sharpe, superintendent, has forwarded a good collection of fresh fruit from the Experimental Farm at Agassiz, and has also put up in preserving fluids 188 jars of the more perishable and early ripening fruits grown on the Experimental Farm for British Columbia.

A good location for the display of Canadian fruits has been secured in the Imperial space in the main building devoted to horticulture, where Canadian fruits will be placed side by side with those from other fruit producing countries. A further display will be made in a suitable space provided in the Canadian building. It is also proposed that examples of the early ripening Canadian fruits of the growth of 1900 be sent to Paris in cold storage in August and September of that year, so that a good impression may be made with fresh Canadian products during the closing weeks of the exhibition. It is believed that Canada will make an excellent showing on this occasion, which will demonstrate to the world her capabilities as a fruit-growing country, and, with the evidence submitted by this exhibit drawn from fruit-growing areas from the Atlantic to the Pacific, convincing testimony will be afforded of the suitability of the Canadian climates for producing fruits of the most attractive character and of the highest flavor.

GOOD ROADS FOR FRUIT GROWERS.

Mr. A. W. CAMPBELL, Government Instructor in Roadmaking, Toronto, delivered an interesting address upon the subject of good roads, and urged the appointment of a committee to assist in the work of road improvement.

The SECRETARY: I think perhaps it might be wise for us to appoint a committee on Good Roads, as was suggested by Mr. Campbell. I am sure that we, as fruit growers, are as anxious that we should have good roads throughout our country as any others in the Province. I would move the following Committee on Good Roads, and if they could form any resolution to send in to the Minister of Agriculture, it would be a good move in this direction:—E. Lick, Whitby; G. C. Caston, Craighurst; Harold Jones, Maitland.

Mr. HUGGARD seconded the motion, which was carried unanimously.

VOTES OF THANKS.

Your Committee on Resolutions beg leave to further report—

That it be resolved, that a hearty vote of thanks be tendered to the mayor and corporation of the town of Whitby for the use of the Music Hall for the annual session of the Ontario Fruit Growers' Association; also to the following persons, Misses Mitchell, Perley, Crysdale and Yorke, for their valuable services in furnishing music for the evening sessions; also to Dr. Saunders, Prof. Macoun, Prof. Hutt and Prof. Robertson for their valuable papers and addresses; also to the several persons who contributed exhibits of fruit.

Finally, that the sympathy of the Association be conveyed by the Secretary to Messrs. T. H. Race and A. M. Smith in the illness that has prevented their attendance at this meeting.

THE MANCHESTER SHIP CANAL.

Mr. R. DAWSON HARLING, of Toronto, then gave a lecture on the Manchester Ship Canal, illustrated by stereopticon views, Mr. Maughan working the instrument. Mr. Harling said his subject was a continuation of that spoken of so well by Mr. Campbell this evening—that of transportation. By means of that marvelous piece of engineering work, the Manchester Ship Canal, Manchester stands in relation to the transportation question as a seaport like Liverpool, though it is thirty-five miles inland. The Manchester canal, though one of the wonders of this century, was mooted—in relation to sailing vessels—over a hundred years ago; but, if it had been built then, it is certain it would not have accommodated the

steamships of the present day. The present canal is capable of carrying the largest cargo boats of to-day, steamers capable of carrying up to 9,000 gross tons. The canal runs from the Mersey, near Liverpool, right through the heart of the country. The canal was built in spite of tremendous opposition from the harbour companies, of enormous capital, and from various railroad companies. The bill was thrown out of Parliament three times; and even when it passed, the canal was built through opposition inch by inch from landholders and others. Why was the canal necessary? About the year 1875 competition became so keen that it was almost unprofitable to manufacture cotton, and in most cases the mills were closed down. This continued for five or six years; and if the decadence went on for ten or fifteen years, there would have been no city of Manchester so far as the cotton trade was concerned, and to the enormous population which surrounded the city the matter was serious. A commission was appointed to investigate, and they reported that the cause of the whole trouble was the excessive charges upon their foreign raw materials at the port of debarkation, and for bringing those materials from the sea coast to Manchester. The only solution was to be found in the building of light railways from Liverpool to Manchester, or to build the canal. The railways had taken up all the attention and nearly all the capital; but the canal came to the front, with Daniel Buchanan as the prime mover. Five years ago last January it was opened. The great increase in the size of ships a year or two after the opening gave rise to predictions of failure, but these were soon dispelled. One of the chief factors in transportation is to have your produce carried to the consumer in the most direct way and in the cheapest way. The Canal Company made up their minds that a canal without a steamship line would be of very little use; so the steamship company was formed in the opening of 1898, with a million pounds sterling capital, called the "Manchester Liners, Limited," and they decided that their first trade should be exclusively between Canada and Manchester. They began by buying two boats —the Manchester "Enterprise," which foundered in the Atlantic week before last, and the Manchester "Trader." Then they put on the stocks seven new boats, that are some of the finest going out from Canadian ports. They run from 7,000 to 9,000 tons dead weight, and are fitted with cold storage and every possible means for carrying perishable products over and landing them on the other side in the best possible condition.

The Secretary moved a hearty vote of thanks to Mr. Harling for his kindness in giving us the address and bringing the beautiful views before us. The motion was carried unanimously amid applause.

Mayor RUTLEDGE: I have great pleasure in moving a hearty vote of thanks to the President and Secretary, and to the various members of the Association, and the gentlemen who have been present with us in the past two evenings, for their very great kindness in visiting the town, and for giving us the mass of excellent information which they have. I feel that the town and this part of the country will be forever indebted to the Fruit Growers' Association of this Province for their very great kindness in these ways.

Mr. HUGGARD: I rise to second this motion with the greatest possible pleasure, and I am quite sure that every citizen of the town of Whitby will endorse it very heartily. It is five years since the question was asked, "Will you come here to make us a visit?" You promised to do so, and you have kept your promise faithfully and well; and such a mass of information has not been given to any people for a long time.

The motion was carried amid applause.

THE SECRETARY, in acknowledging the vote, said: We have been delighted with the reception we have received in your town. Everywhere we go we have to become acquainted before we are understood. Some towns think we are bringing some show, and that we want to make money out of the affair, and it takes

some time to convince them that we are trying to be of public benefit, and to gather such information for our report as we can from the people who attend our meetings. We have gathered information from you, and appreciate all the kind words you have given us.

The Convention closed by singing the National Anthem.

LIST OF AFFILIATED HORTICULTURAL SOCIETIES.

Name.	*President.*	*Secretary.*	*No. of Members.*
Arnprior	Claude McLachlin	George E. Neilson	58
Belleville	W. C. Reid	W. Jeffers Diamond	70
Brampton	W. H. McFadden	Henry Roberts	95
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