TWENTY-SIXTH ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION

OF ONTARIO

1894.

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

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CONTENTS.

MURRAY PETTIT, Esq., Winona,
President of the Fruit Growers' Association of Ontario, 1895.

WEST SIDE OF CONSERVATORY, AT ONTARIO AGRICULTURAL COLLEGE, GUELPH.

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FRUIT GROWERS' ASSOCIATION OF ONTARIO

To the Honorable John Dryden, Minister of Agriculture:

Sir,—I have the honor of placing before you for approval the Twenty-Sixth Annual Report of the Fruit Growers' Association of Ontario. I believe you will find it to contain information of great value to Ontario fruit growers, on fertilization of flowers in orchards, fungi and insects and their remedies, new fruits, score cards for judging fruits, prevention of fraud in fruit packing, and numerous other subjects.

The interest shown in our Orillia meeting was unprecedented. Our work is enlarging on every hand to such an extent that our finances are taxed to the utmost to meet our requirements.

I have the honor to be,

Sir,

Your obedient servant,

Grimsby, January 7th, 1895.

L. WOOLVERTON,
Secretary.

OFFICERS FOR 1895.

PRESIDENT:

Murray Pettit.....Winona, Ont.

VICE-PRESIDENT:

W. E. Wellington.....Toronto, Ont.

SECRETARY-TREASURER AND EDITOR:

L. Woolverton.....Grimsby, Ont.

DIRECTORS:

Division No. 1.....W. S. Turner, Cornwall.
Division No. 2.....R. B. Whyte, Ottawa.
Division No. 3.....George Nicol, Cataraqui.
Division No. 4.....Wellington Boulter, Picton.
Division No. 5.....Thos. Beall, Lindsay.
Division No. 6.....W. E. Wellington, Toronto.
Division No. 7.....W. M. Orr, Stony Creek.
Division No. 8.....A. M. Smith, St. Catharines.
Division No. 9.....L. Chapin, Brantford.
Division No. 10.....J. A. Morton, Wingham.
Division No. 11.....T. H. Race, Mitchell.
Division No. 12.....Alex. McNeill, Windsor.
Division No. 13.....G. C. Caston, Craighurst.

AUDITORS:

A. H. Pettit.....Grimsby.
George Fisher.....Burlington.

CONSTITUTION AND BY-LAWS OF THE ASSOCIATION.

CONSTITUTION.

Art. I. This Association shall be called "The Fruit Growers' Association of Ontario."

Art. II. Its object shall be the advancement of the science and art of fruit culture by holding meetings for the exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem advisable.

Art. III. The annual meeting of the Association shall be held at such time and place as shall be designated by the Association.

Art. IV. The officers of the Association shall be composed of a President, Vice-President, a Secretary, or Secretary-Treasurer, and thirteen Directors.

Art. V. Any person may become a member by an annual payment of one dollar, and a payment of ten dollars shall constitute a member for life.

Art. VI. This Constitution may be amended by a vote of the majority of the members present at any regular meeting, notice of the proposed amendments having been given at the previous meeting.

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

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

BY-LAWS.

1. The President, Vice-President and Secretary-Treasurer shall be *ex-officio* members of all committees.

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

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

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

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

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

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

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

9. The Directors shall audit and pass all accounts, which, when approved of by the President's signature, shall be submitted to and paid by the Treasurer.

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

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

12. At special meetings no business shall be transacted except that stated in the Secretary's circular.

13. The order of business shall be: (1) Reading of the minutes; (2) Reading of the Directors' Report; (3) Reading of the Treasurer's Report; (4) Reading of the prize essays; (5) President's Address; (6) Election of officers, and (7) Miscellaneous business.

14. These By-laws may be amended at any general meeting by a vote of two-thirds of the members present.

15. Each member of the Fruit Committee shall be charged with the duty of accumulating information touching the state of the fruit crop, the introduction of new varieties, the market value of fruits in his particular section of the country, together with such other general and useful information touching fruit interests as may be desirable, and report in writing to the Secretary of the Association on or before the fifteenth day of September in each year.

The President, Vice-President and Secretary shall be *ex-officio* members of the Board of Directors and of all committees. The reasonable and necessary expenses of directors and officers in attending meetings of the Board of Directors and of Committees shall be provided from the funds of the Association.

Local Fruit Growers' Association.

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

17. Any one may become a member of such local society for one year upon payment into its treasury of a minimum sum of one dollar; and a compliance with clause 18 of these by-laws shall constitute him also a member of the Ontario Association for the same term.

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

19. Each local society so affiliating, with a membership of not less than twenty-five, shall be entitled to a visit from some member of the board of directors or other prominent horticulturists, once a year, at their own request; it being understood that the railway expenses of such speaker shall be paid by the Ontario Society, and the entertainment provided by the local society.

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

21. These local societies, if formed in cities, towns or incorporated villages, may be formed under the Agriculture and Arts Act (see sections 37, 46 and 47) and receive their due share of the Electoral District grant for the support of such societies.

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

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

AGRICULTURAL DIVISIONS.

1. Stormont, Dundas, Glengarry, Prescott and Cornwall.

2. Lanark North, Lanark South, Renfrew North, Renfrew South, Carleton, Russell and the City of Ottawa.

3. Frontenac, City of Kingston, Leeds and Grenville North, Leeds South, Grenville South, and Brockville.

4. Hastings East, Hastings North, Hastings West, Addington, Lennox and Prince Edward.

5. Durham East, Durham West, Northumberland East, Northumberland West, Peterborough East, Peterborough West, Victoria North (including Haliburton), and Victoria South.

6. York East, York North, York West, Ontario North, Ontario South, Peel, Cardwell and City of Toronto.

7. Wellington Centre, Wellington South, Wellington West, Waterloo North, Waterloo South, Wentworth North, Wentworth South, Dufferin, Halton and City of Hamilton.

8. Lincoln, Niagara, Welland, Haldimand and Monck.

9. Elgin East, Elgin West, Brant North, Brant South, Oxford North, Oxford South, Norfolk North, and Norfolk South.

10. Huron East, Huron South, Huron West, Bruce Centre, Bruce North, Bruce South, Grey East, Grey North and Grey South.

11. Perth North, Perth South, Middlesex East, Middlesex North, Middlesex West and City of London.

12. Essex North, Essex South, Kent East, Kent West, Lambton East and Lambton West.

13. Algoma East, Algoma West, Simcoe East, Simcoe South, Simcoe West, Muskoka and Parry Sound.

THE ANNUAL MEETING, 1894.

The Annual Meeting of the Fruit Growers' Association of Ontario, opened at eight o'clock p m. on Tuesday, December 4th, in Shaftesbury Hall, Orillia, the President, Mr. T. H. Race, in the chair.

THE PRESIDENT'S ADDRESS.

By T. H. Race, Mitchell, Ont.

In rising to deliver, what falls to my lot to-night, the thirty-fourth annual address of the President to the Ontario Fruit Growers' Association, I feel deeply impressed with the truth of Solomon's affirmation that there is nothing new under the sun.

After thirty-three of my predecessors have performed annually this task you may well wonder what there is left for me to say that has not already been said.

My immediate predecessor had the advantage of most of us and especially of me in coming, as he did, both before and after the great Columbian Exposition. In his address two years ago he had the great exhibition in anticipation. One year ago he had it all before him in its magnificent fulfilment.

Two years ago this Association had to consider what its duty was in connection with the fruit interests of this province at the great World's Exposition, and how best it could perform that duty. One year ago it need do little but talk of its achievements and the honors that it won there. And it will look back with pride to those achievements for many years to come.

But we are not depending for a justification for our existence on what we have done, nor shall we rest content at what we have accomplished. As an Association, we have steadily developed, and extended our operations and influence since the first organization, over thirty years ago, to the present time. We are bigger and better and stronger to-day than we were last year at this time, and we have a great future before us and a great work yet to do.

The fruit season just closing has had its disappointments, but they are not unmixed ones. Owing partly to the heavy frosts during the latter part of May and partly to the continued heavy rains immediately following, the great promise in the abundant show of blossom was not fulfilled in the crop of fruit; except perhaps in the one item of grapes. But while the apple crop has on the whole been short, prices have ruled high, and we have learned afresh the lesson, which we have hitherto accepted with more or less of doubting, that the Canadian apple of the right sort and quality need never lack for a ready market. It is gratifying to know that the apple grown in Ontario has established for itself a reputation in the markets of the old world that will insure it a sale in any quantities if properly and honestly handled. There is now no need for fear of over-production. The dangers to our apple industry in this province comes not from over-production, but from unsuitable fruit, bad packing and dishonest handling. We have much missionary work to do right here in this connection, and just how to accomplish that work, if Government inspection cannot do it, I am unable to suggest. It is

lamentably true that the good reputation which our apples have secured abroad has been largely neutralized by the distrust that has shown itself in our packers and handlers, and which we regret to say, is not altogether without cause. This defect must be righted and our efforts as an Association are invited in that direction and to that end.

We have a grand country to work in, and we know not yet the possibilities of our land as a fruit producing province. The experiences of every passing year adds to our faith in the magnitude of these possibilities. The markets of the great Northwest are opening up to us and demanding more and more of our fruit every year. The markets of the old world are ours if we but supply them honestly with the best we are capable of producing.

When Moses desired to learn of the character and capabilities of the land of Canaan he sent a deputation over to gather of its fruits. And when they returned, bearing with them samples of the fruit that they had found and gathered, Moses was satisfied, and longed to possess so goodly a land. We have in this Province of Ontario a heritage as rich as any land that Moses ever wished for, and we are well out of the wilderness that our forefathers struggled in before this association was born. And now that we possess in peace a land so good, of such vast possibilities, it is a duty that we owe to the Almighty who gave it, to our forefathers who brought it out of the wilderness, to ourselves who now enjoy it, and to our children who shall hereafter inherit it, that we possess it well and frugally, making it by our efforts to produce more abundantly of the fruits so natural to its soil and climate.

Figures and statistics are usually dry and uninteresting things, especially when brought into an address like this. But in turning to the Trade Returns I find encouragements to the labors of this Association, and valuable lessons also in the condition of things as shown there. Taking first the importations of dried fruits for home consumption, we find that in 1891 the value of such commodities brought in from other countries amounted to $1,158,000. The following year it was down to $1,000,000, and the year just past to $900,000, decreasing at the rate of $100,000 a year, which is largely, if not wholly due to the increased consumption of home grown fruits.

In the matter of dried apples alone, we imported in 1892 $11,500 worth, and only $1,500 worth in 1893, which goes to show that the evaporation of home grown fruit is enormously increasing, and that the home consumption is being supplied by the Canadian evaporator.

In the matter of green apples, we brought in for home consumption in 1892 $81,000 worth, and only $35,000 worth in 1893, and in the former year we sent out to other countries $1,500,000 worth and in 1893 over $2,500,000 worth. In 1891 we imported grapes to the value of $79,000, and in 1893 the amount had been reduced to $70,000, showing conclusively that we are supplying our own markets more and more with our own fruits in all the staple lines, and annually increasing our exportations to other markets in several lines. In the matter of canned goods the consumption of home grown fruits is steadily increasing, and the importation of canned fruit proportionately falling off. In 1891 we imported canned fruit to the value of $73,000, and the amount had declined to $61,000 in 1893, while the average exports for the past four years shows a steady increase.

Then turning to the nursery interests, we find something of interest there. In 1889 we brought in from other countries $87,000 worth of apple trees for planting purposes. From that year to 1893, there has been a steady but marked annual decrease, until the amount last year reached only $24,000 worth. And while this decrease has been going on in importations the matter of orchard planting has been largely on the increase, showing that the Canadian nursery industry has been keeping pace with the general progress in home developments. I mention these matters because I believe they all have a bearing on and a close relation to the effects and influences of the Ontario and affiliated Fruit Growers' Associations.

I recognize with grateful acknowledgments the generous aid that this Association is receiving from the Department of Agriculture in the Ontario Government, and also from the Department of Agriculture at Ottawa. The former has, through liberal grants of money, enabled us to establish testing and experiment stations at several points throughout the province, where a great variety of fruits are now being grown and tested, that their qualities and suitability to our varying soils and climatic conditions may be ascertained before being offered to the public for profitable cultivation. We expect to widen and develop this department of our work as fast as the resources placed at our command will admit of; and it is confidently hoped that the results obtained will prove of much value to the fruit grower and to the province—sufficient, we believe, to more than justify the expenditure and the labor involved. To the Department of Agriculture at Ottawa we feel grateful for the ready response to our requests for tests and experiments in spraying and other means for the destruction of the codling moth, curculio and sundry other pests that the fruit grower has to contend with. For these tests and experiments the season has not been a suitable one, owing to the constant rains throughout the spraying season, but under more favorable circumstances, or I might say ordinary conditions, much valuable and practical knowledge must surely result from these experiments.

Since we met together one year ago one of our number has passed, like a ripened fruit, away. We mourn to-day, in the death of our fellow director, Mr. David Nicol, one whose association we all enjoyed and whose wise and deliberate counsel we all valued. And this loss that we all feel to-day reminds us that we too belong to a great vineyard whose fruit is ever ripening and dropping off. David Nicol was one who devoted himself industriously to the cultivation of the beautiful in nature and to the improvement and development of all the choicest fruits capable of production in his adopted province. To labor in the vineyard of nature was to him a labor of love, and out of his labor came both profit to himself and instruction to his fellow man. Let us remember him for the good he has done, for the valuable services he contributed to the interests with which we as an Association are identified, and for the ennobling example he left us in his life and labors. He neglected not the cultivation of the spiritual vineyard, and when the harvest time came he was gathered like a ripe and golden fruit into the garners of the celestial mansion.

FIRST DAY.—EVENING SESSION.

ORILLIA, Tuesday, December 4th, 1894.

President RACE : Ladies and gentlemen and members of the Ontario Fruit Growers' Association.—We have met together again after twelve months to compare our experience along the lines which we have been pursuing for years in this province. I feel like congratulating ourselves upon the very favorable auspices under which we have met here this year. We are in a beautiful town, and we find that there is greater enthusiasm manifested here than in most places where we have met in past years. We are also favored to-night with the presence of quite a number of ladies in the audience, which is gratifying to us. We hope that to-night is an index of better things. We desire to cultivate those features in our meetings which will reach the ladies and interest them in the beautiful in nature. I fear sometimes that we have neglected that side too much. We have some papers from ladies during our sessions and I believe that these will tend to revive the interest in that line. We have a very full programme, and more than we will get through with in four days, so we will try to get on as hastily as possible with these papers. I shall now introduce Prof. Panton.

FUNGI.

Prof. J. H. PANTON, of the Ontario Agricultural College, Guelph, delivered the following address, in the course of which he made frequent reference to a chart of illustrations: The subject which was allotted to me for this evening is a discussion of the fungi, one of the most interesting and one of the most instructive groups in plant life at the present time. A few years ago very few knew anything about fungi, in fact it was almost an unknown word, and many even now may not understand what the word means. However, I hope that by the time I get through you will all have a true conception of the meaning of the word fungi.

This is a division in the plant kingdom the study of which requires the aid of a microscope. I have brought a microscope with me to-night. It does not seem a very large instrument, but is an excellent one for the size. I just mention this as some may think of purchasing one. It is made by Leitz, and magnifies up to six hundred diameters. An instrument like this would cost quite a sum a few years ago, but can now be purchased for about $20. It is by means of a little instrument like this that I have been able to look into a great many of these obscure forms of plant life and bring out in detail on this chart how they appear under the microscope. You will notice that I have a chart before you, arranged so as to make my subject as clear as possible.

Rank. Where do the fungi stand in the plant kingdom? Now we find that when we look abroad in nature there are two large divisions of plants, viz. : the flowering and flowerless. Who ever saw a fern flower? You have never seen a mushroom blossom, you never saw a seaweed bloom. Fungi, too, never flower, and consequently they are what we call flowerless plants. Flowerless plants grow from what we call spores ; flowering plants grow from seeds. All flowering plants started from seed ; all flowerless plants started from spores. Among these flowerless plants I might mention seaweeds, ferns and mosses, but we shall not consider them. But there is another group called fungi, and this shall engage our attention this evening.

Fungi start from spores. Now what is the difference between a seed and a spore? A spore is invisible. Why, this room is full of them! The air is swarming with them—they are all around us. If I were to leave a piece of bread exposed in this room for twenty-four hours, there would be mould upon it.

Seeds are visible. I do not think you can name any seed which we cannot see. They are all sizes. But spores are invisible, and we require a microscope in studying them. You may have the liberty during the session of looking through the microscope and seeing the spores on the gooseberry, etc. Then there is another difference. The spore has a very thin covering, but the seed always has a distinct covering. There is still another difference. In the spore there is no embryo, while in the seed there is.

You take a wheat grain and cut it, and in one part you will see the embryo or little plant, which is the point of germination Take any seed and when examined you will always find a certain part we call embryo or young plant, but you never find an embryo in a spore. Another difference; when you put that little spore in the ground, germination is indefinite. By that, I mean that the spore has not a certain point from which it starts. Now, in the seed there is always a particular spot where the germ lies and from which the seed will start to grow.

The nature of fungi will now occupy our attention. Although not true for every one, yet I may make the general statement that in most cases after the spore germinates, it produces a lot of little threads. These interlace and pass in among the cells of the plant upon which the fungus is found, or among the material on which it grows.

Fungi either live on dead organic matter or upon living matter. It is not an uncommon thing for little suckers to dip down into the cells among which the thread-like structures grow. After a time in the history of the fungus spores are produced. As soon as that happens, you will find that from these little threads stalks grow up, each with a little round body at the end. That little structure may contain many spores inside of it. This is one of the ways a fungus produces fruit. There are a great many ways of producing fruit among the fungi, most of which are very wonderful and interesting.

There is a certain class, like the mushroom and toadstool, which grow on dead organic matter. They are called saprophytes. There is another kind, like the rust on the wheat and plum knot on plums, that live on living things; they are called parasites. We have considered the nature of fungi, let us now consider the third point in my chart.

The different kinds of fungi. It would take too long to discuss them in detail, but I shall endeavor to give you a general outline of the different types among these peculiar plants. There is nothing that comes home to the fruit grower more than the effects of these fungi upon his crops. I shall now refer to the different kinds, and avoid as far as possible the use of technical names.

The first are the slimes, more troublesome to the farmer than fruit grower, as they attack his turnips sometimes, causing the so-called "clubroot."

The next we notice is the great family of microbes. There are many forms in this group, which is now so much studied, because we find here the cause of many contagious diseases. It seems that we are surrounded on all sides by invisible enemies in the form of these microbes, all of which are exceedingly minute. We can overcome them by keeping in good condition, but if a person is in poor health he does not know at what time the microbe of typhoid fever or some other disease may take hold of him.

Some of these microbes are troublesome in the fruit growers' orchard. For instance, there is one that attacks the pear when affected with pear blight. These microbes are among the lowest forms of fungi. There is an oval type often associated with the rot. There is the unfortunate rod type that causes consumption. We find this not only associated with consumption, but also in a good many diseases. There is one that causes lockjaw; there is one that causes cholera, and there is also one that is often found in sewerage material. Each has a distinct shape and each disease has a specific form of microbe.

We now come to the moulds. If you take a piece of lemon and lay it aside for a few days in some warm place, like this room, you will find it will get covered with mould. Small stalks start up, little knobs grow at the end, each becoming full of spores.

Mildews may be divided into two types, the white and the brown. Let us first look into the white type of mildew. One is found on the grape and is called grape mildew. In this case you have all noticed that the under side of the leaf becomes covered with a web-like structure. If you take an affected leaf and cut a thin section and examine among the cells, you will see threads, and dipping down from these into the cells little suckers, which absorb nourishment from the host-plant. Out of the spores (*stomata*) in the leaves some five or six little stalks bearing on the end little round bodies, appear as the fungus develops. Now what happens? One of these oval bodies drops from the end of the stalk, if I may use the expression, and very soon after the contents commence to divide up, and roll out as rounded bodies. These develop a couple of hair-like appendages which enable the spores to move about to reach a suitable spot for develop-

ment. The spores cannot develop unless it is moist. This enables them to wriggle around until they find a suitable place for germination, and when that takes place you have the life history repeated as already described. Such is the mode of development seen in the mildew, which is known as the Downy Mildew of the grape.

Here is very much the same thing in the potato. (*Ill.*) The old fashioned rot in the potato is largely owing to the presence of mildew.

Now there are a great many mildews, the grape, pea, turnip, etc. Almost every plant we find has its specific mildew. Even on the plant Shepherd's Purse, we find a mildew, which in its general life history is the same as the mildews referred to on the chart.

Having discussed the white mildews, we shall now examine some of the brown. Here we find two types, one, which is external in its attack, growing largely on the surface of the leaf. We find another type internal growing within the tissues of plants. Probably the one with which you are most familiar is that which appears on the gooseberry. I have placed a very fine specimen of that under the microscope upon the table, which you may examine when you have an opportunity. When this mildew makes its appearance, you first see a greyish white powdery substance upon the gooseberry, resembling in form this figure. (*Ill*) If you examine the other mildews, you will find the threads are not jointed, but when you come to this form the threads show partitions. As soon as the time arrives for the fungus to produce spores, it throws up little erect threads, presenting a jointed appearance. The last division falls off, then another, and so on, others growing in their places, until innumerable spores are produced. We see in this fungus a peculiarity ; a class of spores appear at a certain part of the season and another class later on. Those about which I have been speaking are summer spores, the use of which is to propagate the fungus with rapidity. They grow in a very short time and thus the fungus spreads readily. The late spores, however, are longer in being produced, their object being to carry the disease into another season.

Later in the season the gooseberry becomes brown. If you take a small piece of this and put it under the microscope you will find any number of threads and minute brown nut-like structures. Let us look into these brown bodies and we shall find other minute bodies that are about the shape of an ordinary flask ; each of these contains eight spores. The diagram before you represents the appearance of this fungus upon the gooseberry.

You will find almost the same mildew on the grape. It is what you call powdery mildew and it is also external. There is little difference except that the little brown nuts in the grape are surrounded by a number of hook like threads. You will sometimes find a mildew of this nature upon the apple, but instead of hooks at the end of the threads you find little expansions, but much the same in other respects. These are among the most common types of what I have called external brown mildews.

We now come to some which are internal, and probably the one with which you are most familiar is the plum knot. I do not think that any of you here think that the plum knot is caused by an insect, but by a parasitic plant. In the spring of the year when the plum knot begins to form, you will notice that it has a velvety appearance caused by the presence of these little stalks sticking up with spores on the end of them. In February after the velvety appearance has passed away, if you take a very thin section of the plum knot, you will find it is almost covered with minute pimples. A thin section at this time shows small spaces containing many flask like structures and in each eight spores. These are winter spores to carry the disease into the next season. Looking at the diagram you see that this fungus grows in the tissues of the knot, and you do not see it as you do the mildew on the gooseberry.

The ergot of rye has much the same life history. When this trouble gets into the rye it is a very dangerous thing to feed it to cattle. It produces disease and serious results follow.

Black rot of the grape is the same form and there are a great many others belonging to the type of external brown mildew.

Our next group embraces the rusts. We understand the nature of the life history of the rust on wheat, but as yet, have failed to get a good remedy. Here are a few diagrams illustrating the life history of the rust in wheat, and the rust that appear on the

apple and sometimes on the quince. The rusts have a peculiar life history. In the rust it takes two plants to complete the disease. There are several instances of this principle in the animal kingdom. It takes two animals to produce tapeworm, hog and man, or a cat and a mouse. A mouse develops it so far and when the cat eats the mouse, the tapeworm is developed in the cat. The same is true in the case of trichina, the hog develops it so far and man completes the development.

Now we find the same thing in plant life; wheat rust can go so far on your wheat, but the life history of the plant is completed on another plant; in some cases on the barberry. The apple rust cannot be developed on the apple alone. The spores get to the red cedar and there they develop what we call cedar apples. In the spring of the year you will observe on these apples peculiar structures like this (*Ill.*) and these develop something like you see here (*Ill.*) so that before you can have rust on the apple, you must have red cedars. It is therefore wise to destroy the red cedars.

We next consider the smuts. I do not think any of the smuts trouble the fruit grower, but they do the farmer. Here are some forms, (*Ill.*)

But as they are of more interest to farmers than fruit growers I pass on to the last group of the fungi.

Mushrooms. This is a comparatively harmless family. I am inclined to think there is likely to be a field opened up for enterprise in the cultivation of mushrooms People are not only collecting them from meadows, but are beginning to grow them for profit. This group is one of the largest among the fungi. Now if you examine the soil in which mushrooms grow you will find it is full of thread-like structures, the vegetative part of the fungus, from this arises the so-called mushroom, which is really the fruit bearing part of the fungus; These thin gills beneath are covered with spore-bearing stalks. These spores as soon as matured fall into the ground where the mushrooms grow. The ground is full of them. We have now directed your attention to several groups of the fungi, viz: slimes, microbes, moulds, mildews, rusts, smuts and mushrooms, some of which are very injurious to the fruit grower.

Remedies. We have learned something about the nature of these fungi. What shall we do to destroy them? Thousands of dollars have been lost every year from the attack of fungi, but we are now learning how this may be diminished. From a study of the habits of the fungi we have learned we must depend upon prevention rather than cure. Many are located in the cells of the plants and beyond our reach, so that we must deal with them at an earlier stage. We should always, as far as possible, destroy all affected material. Some of you may have had your plums affected with plum rot. Affected plums left hanging on the tree have on them millions of spores, to be carried over to the next season. As soon as the warm weather arrives, these spores may be wafted about and thus cause any amount of plum rot. These should be destroyed. Examine the rot that attacks apples, you will see affected apples covered with spores which cause the disease. How important that they shouldbe destroyed when seen!

Another principle that I would advocate in the prevention of fungi, is cultivation, so far as it aids in increasing the vigor of the tree. It is a very important thing to keep the plant in a healthy condition.

The third principle is the application of fungicides or fungi killers. This principle has been most emphatically demonstrated by many experimenters with fungicides. This is a list of the most common: copper sulphate and Bordeaux mixture (the same thing except that the latter has lime mixed with it); eau celeste (sulphate of copper, washing soda, with a little ammonia); carbonate of copper and potassium sulphide. But we have cut the list down until we have about one remedy for all, *Bordeaux*, so that we have now, I believe, a fungicide which covers nearly every case. There is one that is being largely used for the mildew of the gooseberry, Potassium sulphide, but the Bordeaux is the panacea for all; and every one should know what it is. It is simple sulphate of copper, lime and water. Some differ a little regarding the proportions, but a very excellent one is: five pounds sulphate of copper, four pounds fresh lime, and forty gallons water.

I believe the proportion, four, four, forty will prove equally successful, and is easily remembered, as one pound sulphate copper, one pound of lime, ten gallons of water.

Application. The point to be kept before us is not to waste material and do the work thoroughly. There are very many ways of applying the fungicides. We have spraying machines for this purpose. There is the little hand sprayer, the knapsack sprayer, the barrel, and the wagon with gearing. These are the machines we use. The form of nozzle used is of great importance; among the best are the Cyclone, the Vermorel. The latter is a very economical one, making an exceedingly fine spray. It is a little slow but does the work well. The Nixon has a sort of a sieve on the end of it, and throws out a strong spray. The McGowan is one which is very popular to-day. It is so graded that you can bring the spray down to a very fine condition, and there is little waste of material.

When to make the applications. Two before and two after blooming. What I mean by that is, first, in the early spring before the leaves buds swell, apply sulphate of copper in the proportion of one pound to twenty-five gallons of water, that is strong and as there is no foliage on the trees a little goes a long way.

In the case of grapes you may spray your grape-posts and trellis also, for some spores may be upon them. As the sulphate will burn the foliage and destroy it, consequently, after the foliage appears we should apply Bordeaux mixture, which is sulphate of copper and lime. The Bordeaux is applied before and immediately after blooming time, and again about ten days later. In other words, one application before foliage, one after foliage and before bloom, and two after bloom.

I have reached the end of the subject you so kindly asked me to discuss before you; but if there are any here who desire to ask some questions I shall be pleased to answer them as well as I am able. (Applause.)

A. M. SMITH: I would like to ask the Professor if plowing under leaves of a diseased grape would destroy it, or would there be any danger of the disease coming up?

Prof. PANTON: I think that if they were plowed in deep enough the spores would not likely reach the surface to do harm.

WM. ORR: At what time do the winter spores of plum knot fungus mature?

Prof. PANTON: About February.

A MEMBER: When do they propagate?

Prof. PANTON: They propagate in the spring.

A MEMBER: About what time do you assign to the maturity of the summer spores?

Prof. PANTON: About June and July, when the knot has a velvety appearance.

F. G. H. PATTISON: Do spores carry in the air?

Prof. PANTON: Yes; for they are so small that they may be readily carried about by the wind.

A MEMBER: Would there be any advantage in spraying in the fall immediately after the foliage has fallen?

Prof. PANTON: To some extent you may kill spores that are lying about.

A MEMBER: Is it a fact that fungicides have no effect upon spores after they germinate?

Prof. PANTON: I think they can if development is not gone too far so as to place the fungus beyond the reach of the fungicides.

A MEMBER: Do you consider that the black knot of cherry and knot of plum belong to the same species?

Prof. PANTON: Yes.

A MEMBER: Can you tell us anything about peach yellows?

Prof. PANTON: Not beyond that the cause is not known. The subject is now being studied by specialists, and as yet not much more has been learned than that it is contagious; but its cause has so far evaded research.

J. A. MORTON: I understood you to say in the course of your lecture that the potassium sulphide mixture is as useful as any other for destroying the gooseberry mildew. Now I have been taught that it is not. My experience with potassium sulphide thus far is that if you are not very careful it will dry up the leaves. I lost about half the leaves off my bushes after one application. Bordeaux mixture I consider a great deal safer. I have tried potassium three years, and Bordeaux mixture I have given only two years' test. Bordeaux is, in my experience, the safest and best remedy. This present year I have had no mildew on my gooseberries. Out of two hundred and fifty quarts I do not believe I had half-a-dozen gooseberries that showed any signs of mildew at all.

The SECRETARY: What kinds, Mr. Morton?

Mr. MORTON: All English varieties except Whitesmith. Before treating with Bordeaux mixture I had made up my mind to quit raising English gooseberries. One year, to test it, I treated one-half of my plants with Bordeaux mixture, and left the rest untreated. I do not advise anyone to do that from a commercial standpoint. The half not treated was badly mildewed, but the part treated with three applications of Bordeaux had no mildew. I can also corroborate what Prof. Panton has said with regard to the Bordeaux imparting a beautiful healthy appearance to the foliage. I found this in the case of the potassium sulphide, that, although I gave it as faithful a test as I did the Bordeaux, there would be patches which escaped the effect of the application. I think the Bordeaux acts more than by contact. Potassium acts only by contact. I also noticed that the foliage of my gooseberries that had been treated with potassium sulphide had not the healthy look that those had which were not treated. Perhaps that is the result in part of the treatment they had received the year before. But I will certainly require more proof and more experience to convince me to go back to potassium sulphide. Another thing about the potassium sulphide is that it is not the most pleasant smell to have about the place.

R. B. WHYTE (Ottawa): I have had considerable experience with fungicides for the gooseberries. I grow about thirty varieties; some are very subject to mildew. I agree with Mr. Morton that potassium sulphide has not been as successful with me as the copper carbonate. I use carbonate-ammoniacal solution. On those which were sprayed with ammoniacal solution there was no mildew; on those treated with potassium sulphide there was a great deal. But I find that the Bordeaux spots the leaves while the ammoniacal copper carbonate does not.

Prof. PANTON: The ammonia makes it a little more expensive.

Mr. WHYTE: A little.

Prof. CRAIG (Ottawa): I am pleased to hear the remarks of the last gentleman. I have been experimenting on the celery with very good results. The question of the gooseberry mildew has been pretty well settled, but our latest experience has corroborated the experience given by Mr. Morton that Bordeaux mixture has given us the best results in preventing the gooseberry mildew. When potassium sulphide was first recommended by the Farm we had not then tried Bordeaux mixture for this disease. Since that time we have found that by using a weaker solution of the Bordeaux mixture we have better results. I think with regard to the remedy which Mr. Fisher has suggested, that of sulphur, he refers more particularly to the powdery form of mildew. It is not so effective for downy mildew.

The SECRETARY: I think that we are very apt to become discouraged too soon with our spraying experiments. Because we do not see the results the first year we give up. I believe that next year we may see the results of this year's work, and so on from year to year, because we are increasing the vigor and health of the plants. Now, if any plant is stunted it cannot do much with fruit; you must get it into a healthy condition first. It may take a year or two to get your plants into a vigorous state of growth to produce fruit, and when in this state they are better able to resist mildew. We should keep on for several years, and then we will find that results are forthcoming. I wish to refer to a little experience in this line. There were twelve gooseberry plants (Whitesmith) in one row, and I have applied Bordeaux mixture for the last two years. Now they are very subject

to this mildew, and I was going to dig them out a year ago. I treated them with Bordeaux mixture all but one plant, but did not see very much difference that year. This year I treated the whole row, and the one that was missed last year was the only one that was affected with mildew this year, while those treated last year were clean. How do you account for that unless it was the two year's work?

Mr. G. C. CASTON (Craighurst): In picking apples this fall we found that certain conditions in the location had a great deal to with the condition of the fruit. We found that when grown on rolling ground the apples were cleaner. The idea suggested is to plant trees on rolling ground, where they can get a good circulation of air.

A. W. PEART (Freeman): Does Paris green act as a fungicide as well as an insecticide?

Prof. PANTON: Some claim that it does, but we look upon it more as an insecticide.

FRAUDS IN FRUIT.

Mr. A. M. SMITH, of St. Catharines, read the following paper:

Notwithstanding that it has been remarked by one of the most prominent and observing men of our country that he never knew a man who was actively and energetically engaged in fruit culture to be a "mean man," I will venture the assertion that there is not another product of the soil through the medium of which there has been as many frauds practised as there has with fruit. From the time the Old Serpent fooled Eve with it in the garden down to the last apple packing, when all the best specimens were carefully placed in the end of the barrel that was to be opened, and the smaller ones dumped in the middle, somebody almost every day has been defrauded by it. My purpose is to mention a few of these frauds and leave it to the consciences of those who are present to decide whether they are guilty of any of them or not, and to have you suggest means, if you choose, whereby any of them can be prevented. The first I shall notice will be frauds practised by those who raise trees and plants for sale, the nurserymen and their agents, or in other words, begin at the root of the matter, for the first frauds they are guilty of is general, that of using roots or seedlings or seeds from unhealthy stock because they can get them cheaper, or in the matter of grafting apples or pears in cutting them up and making two or three trees from one seed, which by forcing may make trees large enough to sell but the vitality and fruit producing powers of which will be far behind a good healthy seedling, and in the matter of selecting seeds or pits, peaches for instance, many nurserymen get their pits from canning factories because they can get them cheap, though they know they are the product of trees where yellows exist and are liable to scatter and perpetuate that disease. But the temptation to fraud is not in using cheap stock alone. They frequently have on hand a surplus of varieties that are, from some cause, unsalable, or for which there is little demand. They may be at the same time short of some variety that is in great demand and that is hard to get. It is human nature if a man has an unsalable thing on his hands, I don't care whether it is a horse or a tree, to try and get rid of it and make the most out of it he can, and herein comes in the temptation to substitute. Nearly every nurseryman's, or agent's, blank orders have this clause in (though, by the way, not one man in fifty who signs it ever notices it), if "you have not got the varieties called for, you may substitute others *you* think equally desirable." Here is a chance to work off the unsalable stock, they think it would be equally *desirable* for *them* at least to work off this stock and let the buyer have it. And has he not signed the order giving them at least a legal right to do this. And there are tree agents that are far less scrupulous than this. I have known them to take orders from people for choice and rare varieties of fruits at extravagant prices, and then go and buy the cheapest trees they could find and label them according to the varieties called for and give them to their customers. And even agents of respectable firms are perpetrating frauds, nearly as bad, almost every day by selling trees that they know (if they know anything about fruit) will not grow to produce fruit but will be a

dead loss of both time and money to the buyer. I was up here in Muskoka 50 miles north of this a few weeks ago and saw trees planted out this fall of tender varieties, such as Greening and Baldwin apples, Bradshaw plums, Black Tartarian cherries, etc., that would not stand the climate here at Orillia, much less 50 miles north. What fruit grower is there that has not paid extravagant prices for new things advertized by nurserymen, which have proved to be of far less value than many old varieties they could get at half the price, or even positively worthless. But perhaps this is enough about the frauds of nurserymen and agents; every grower here will recognize them. But what about the frauds of the growers? Do they ever deceive in their fruit? Do their packages always contain the varieties and quality represented to their customers. Is every basket sent to market as good on the bottom as it is on top? Do all their quart measures hold two pints, or their peck baskets eight quarts? Do their 10-lb. baskets of grapes weigh 160 ounces? Are there any small or wormy samples in the middle of their apple barrels that ought not to be there? Do they ever, when they show fruits at fairs as their own growing, borrow or steal from their neighbors, or deceive the judges by getting two prizes for fruit of different varieties and pick it all off the same tree? I will leave them to answer these questions and pass on to those who sell fruits. The retailers have their reputation at stake and it would not do for them to deceive their regular customers much, and even though they do turn their berries over when they get stale to make them look fresh on top, and sometimes make mistakes in selling Belle pears for Bartletts, and other varieties of peaches for Crawfords, still they are usually pretty honest. But what about wholesale dealers and commission men? Are they always above suspicion? I have heard of some of the latter class that were not. They certainly have a great chance to defraud and I have heard of some who would take a commission from both buyer and seller and even sell at low prices to one another to speculate on. I hope, though, that this class is few, for it seems to me that if ever a man should be fair and honorable it should be when his fellow man puts confidence in him and entrusts him with property to dispose of and make returns for. And now a few words about manufacturers of canned fruits. I believe there are more frauds here than in any other department. I know there are many men in the business of canning, preserving and evaporating fruits that are above fraud, but the desire to make money is so strong in some they cannot resist the temptation. There is always a demand for certain varieties of fruit, such as Bartlett pears and Crawford peaches, and most people suppose when they buy a can of fruit labelled Bartlett or Crawford they have those varieties, but a large proportion of them are not grown on Bartlett or Crawford trees, but are some other kinds of white-fleshed pears and yellow peaches that are bought at a less price. But greater frauds are perpetrated in jams and jellies than in any other fruit preparations. The skins and cores of a large majority of the apples done up in canning and evaporating factories are ground up and made into cider, which with cheap sugar is made into jelly and flavored to imitate strawberry, raspberry, currant, quince, or any other kind of jelly, and put up in small pails and labelled and sold for such jellies. Some of our Yankee friends have even gone a little further and mixed hay and clover seeds with them and sold them for currant and berry jams. And how about wine makers? Do they ever make sparkling champagne out of cider, or pure native wines out of anything but grapes? I knew a man, a few years ago when grapes were not as plentiful as they are now, who made large quantities of what he called wine out of rhubarb, and at the same time some out of grapes. But he never sold anything but pure grape wine. Now, are there any frauds among the consumers of fruit. Do boarding-house keepers ever use any of these cheap jams and jellies because they are cheap, knowing them to be frauds? Do hotels ever use nice colored Ben Davis apples, Champion grapes, etc., on their tables because they will last longer than others of better quality.

I don't suppose any of you here will plead guilty to these frauds, but none will deny that they do exist. The question is, what are you going to do about it? Is there any remedy?

NEW FRUITS AT OTTAWA.

APPLES.

A paper on NEW FRUITS was read by Prof. John Craig, Central Experimental Farm, Ottawa :

McMAHAN WHITE : From A. L. Hatch, Ithaca, Wis. This variety has already been noted in the report of the Central Experimental Farm and I would again draw attention to some of its merits as an apple of value for regions where Northern Spy, Ribston, and Greening cannot be grown profitably on account of their inability to withstand the winter cold. It has proved, so far, a remarkably vigorous and healthy grower, free from any of the defects characteristic of varieties unadapted to this climate. It has borne moderate crops for the past two years. The fruit is large, smooth and attractive. Quality medium, season October to January.

SCOTT'S WINTER : From Dr. T. H. Hoskins, Newport, Vermont, U. S. This is an apple belonging to essentially the same class as the last in regard to the locality in which it should be cultivated.

The fruit is medium to small, handsomely colored ; quality only medium, its acidity being very pronounced. As a keeping variety it excels. Season, February to May for culinary purposes.

McINTOSH RED : I mention this to emphasize some of its strong as well as weak points. Tree fairly hardy ; quality first-class, appearance handsome, season that of the Fameuse or a trifle later, but like the Fameuse it falls an easy prey to the apple spot fungus (*Fusicladium*) and no grower should plant it without first making up his mind to deal vigorously with the enemy.

HAAS OR FALL QUEEN : So mentioned not for its value as a fruit, which is very slight—but for the use that can be made of it as a top working stock. For this purpose it possesses many desirable qualifications, and I believe it safe to say that Ribstons, Blenheims and Kings could be profitably grown on this with possibly increased fruitfulness in districts where they cannot be grown upon their own stocks.

WINTER DUCHESS : Has proved to be a handsome fall apple of fair quality, but will hardly compete with Wealthy, which comes in at the same season.

SALOME : Is a much advertised variety from Illinois. The tree is a round-topped, fairly vigorous grower, hardy at Ottawa. Fruit medium to large, round, green with rarely a blush. Mild sub-acid in flavor. An apple without striking characteristics, but evidently a keeper.

GIDEON : From Peter M. Gideon, Excelsior, Minn., U. S. Of the same parentage as Wealthy, but more vigorous in growth with larger leaves. The fruit is of the size of Wealthy, but much less highly colored. It holds to the tree better and may be considered nearly equal in quality. Where McMahan is grown this variety need not be included.

To attempt a descriptive list of all the Russian varieties which have fruited during the year would make an exceedingly lengthy catalogue, and with our present knowledge could not be of much value. A large percentage of the varieties in the test orchard have been seriously injured by blight during the past two years. Among the members of the Hibernal family, *Cross* from Voronesh, Russia, and *Romna* are handsome fall apples. The fruit is large, coarse in quality, but valuable for cooking. They bear heavily and annually.

LONGFIELD : Is making itself appreciated wherever planted on account of its early and remarkably heavy bearing habits. *English Pippin* is of the type and often confounded with this variety. Longfield is undoubtedly one of the best in quality of all the Russians. The fruit is medium or below in size, round, smooth and regular, yellow with a bright blush on one side. The flesh is white, crisp, sub-acid and good. Under favorable circumstances, as grown in the Province of Quebec, it keeps till March. As a home

use and near market apple it has great value. Like the Fameuse, it lacks the points which constitute the essential requisites for an export fruit. To obtain the best results the fruit should be thinned as the tree is likely to overbear.

Of the Russian apples imported as scions by the Fruit Growers' Association in 1890, I shall hope to make a report upon the fruit of many of these next year. *Sara-synap*, one of the most noted winter varieties, fruited as a top graft the past season. The specimens secured were disappointingly small. Of the shape and appearance of Ben Davis. Quality poor ; season mid-winter.

Plums.

Of these I wish to draw attention to a few varieties which seem worthy of special reference.

Hawkeye: (*P. Americana*) This has already been mentioned in a previous report to the Society, but no apology is needed for this repetition as it is proving quite equal to the task of making itself appreciated. The tree is a strong grower, which is characteristic of the type, and a remarkably heavy bearer. The fruit is large, round, handsome, purplish red ; quality fair. The skin is thick enough to allow of its being marketed in good condition. Season, the middle of September. It should be planted where DeSoto is thought desirable.

Stoddard: (*P. Americana*) From C. G. Patten, Charles City, Ia., U. S. Answers to same general description as the last, but is somewhat later in ripening. Among the Russian plums which have fruited two varieties, so far, are worthy of trial.

(1) Moldavka: This was obtained from Prof. Budd, of Iowa, in 1888. The tree is a round topped, fairly vigorous grower. Shoots large, of a purplish color. It has not been injured by winter so far as have many of the other varieties of *P. domestica* in the test orchard.

Fruit large, one and three-quarters by one and five-eighth inches, oval and somewhat pointed, color dull brownish purple, covered with thick, blue bloom. Stem short, stout, set in a deep round cavity ; suture terminates in a protuberance on one side. Flesh greenish yellow, moderately firm and juicy, mildly sub-acid, not highly flavored, but of fair quality. Pit medium size, oval, firmly attached to flesh. Ripe, September 5, 1894. Thus far it has not proved a heavy bearer.

Early Red: (*P. domestica*) From Prof. Budd. Tree of slow growth, twigs slender, leaves small, hardy. Fruit medium size, oval, dark red with blue bloom. Flesh greenish, firm, juicy ; quality fair to good. Pit firmly attached. This variety has borne light annual crops for three years, and appears promising for the north.

Cherries.

I have to report in this connection that the trees of Koslov Bush Morello, imported by the Association, a portion of which were placed in charge of the horticulturist at Ottawa, have proved hardy, but exhibit considerable variation in habit of growth and character of leaf and bud. A few blossoms last year, but set no fruit. A large number blossomed the past season, and some fruit matured. An examination of the blossoms disclosed the fact that many of them possessed abortive stamens, which may account for the fruit setting very lightly. Samples secured were of small size, bright red, heart shaped, flesh soft and rather astringent. Pit large, altogether not promising so far. But it is not fair to base an opinion on first fruits. I may say that Dr. Charles Saunders succeeded in crossing this with other forms of the Morello, and interesting results may be looked for from this union.

Most of the Russian and German cherries described in Bulletin No. 17 of the Experimental Farm, have realized our expectations in regard to hardiness and productiveness. The varieties specially recommended are being planted to a considerable extent, but would be more generally cultivated if the trees were easily obtainable.

Grapes.

The past season was one of the most favorable for the thorough ripening of this fruit which has occurred within a decade. Fungous diseases were not severe, and were easily controlled with Bordeaux mixture. At the Central Canada Exhibition, held during the last week of September, 142 varieties were shown, of which number seventy-five were well ripened.

Farrell: A white grape, mentioned in the report of the Association last year, produced in abundance enormous bunches of fruit upon vines planted three years ago. The berries, which I said were small last year, were much larger this season, and while the fruit did not reach perfect maturity, yet it gave assurance of good quality. It should be tested in our best grape growing districts.

Brilliant: Of T. V. Munson, a cross from Delaware and Lindley, is a promising red variety for home use. It does not seem sufficiently vigorous or productive for market. But our vines are yet young.

Peabody: A seedling of Clinton, raised by J. H. Ricketts, is by no means a new variety, but is mentioned here with a view of dilating on its good points.

(1) It has borne heavily and has not been affected by mildew, though to a slight extent by anthracnose.

(2) The fruit ripens every year at Ottawa, and the berry holds well to the bunch.

(3) Bunch large, well shouldered; berries medium size, black oval; quality first-class, combining a sprightly acid with a rich vinous flavor. After eating fruit of Niagara or of the Rogers varieties, a bunch of Peabody is positively refreshing.

Secretary: Produced by J. H. Ricketts, Newburgh, N. Y., by crossing Clinton with Muscat-Hamburg. This variety yielded remarkably fine bunches the past season. Bunch and berry medium size, the latter oval; skin moderately thick; pulp very meaty and of an exceedingly pleasant acid. Seeds small, two or three in each berry. On account of its meaty character of flesh, it keeps well. This variety combines in a remarkable manner in both vine and fruit, the good qualities of the European and American grapes. It is not likely to become commercial. It ripens with the Delaware.

Mills: Might be classed with it.

Raspberries.

As a market berry nothing better among reds than Cuthbert has yet appeared. Gladstone, Superlative, and Beaconsfield of the *Rubus Idaeus* or European class have fruited, but do not appear promising, and will no doubt remain in the amateur list on account of lack of productiveness.

Of black caps, Older, mentioned last year, easily retained first place, both for productiveness and quality. The plant is also more easily kept in form than other members of this division.

Strawberries.

One hundred and ten varieties were tested this year. The following varieties gave the largest yields, and are named in order of productiveness: Crescent, Beverly, Jas. Vick, Warfield, Stayman's No. 1, Van Deman, Williams, New Dominion, Beder Wood, Haverland, Parker Earle, Bubach. Each variety consisted of a row sixty feet long. The highest yield was 40 boxes and the lowest 24, of the varieties mentioned.

Timbrell: Gave promise of productiveness. It is early, of fair quality and moderately firm, but its very dark colour is against it as a market berry. The plant seems quite vigorous.

English Gooseberries.

In closing this hasty review of the newer fruits, I would like to call attention to a class of small fruits not new, but unfortunately frequently overlooked. I refer to the

English Gooseberry. This has been a neglected fruit partly on account of unadaptability to all soils, and partly owing to its susceptibility to gooseberry mildew. Now that this disease can be cheaply prevented by spraying, and given a patch of clay or heavy loam, there is no reason or no excuse for slighting this luscious fruit. Gooseberries stewed, gooseberries in jelly and gooseberry tarts are all very nice in their way, but are not to be compared with well ripened berries in their natural state. Plant them on clay soil, where the snow lies deeply; spray and reap your reward, which will surely come.

A. M. SMITH: Have you tried any Japan plums at Ottawa?

Prof. CRAIG: Yes, we have tried them. When the plum orchard was first set out all the varieties then distributed were planted in it. They all died out within three years excepting one variety which lived and bore fruit for two years, and then died.

A. M. SMITH: Do you know the number of the plum?

Prof. CRAIG: This variety has since been identified in New York state and distributed under the name of *Willard*. It is one of the earliest of all the Japan plums.

MEMBERS: Have you experimented with blackberries.

Prof. CRAIG: Yes, we have about thirty under list, but we find it necessary to lay them down in winter, to get the best results.

APPLES FOR NORTHERN ONTARIO.

BY MR. J. H. TOOL, OF ORILLIA.

I see by the programme that I am expected to advise you as to what would be the best kind of apples to plant in Northern Ontario. If my memory serves me right it was for this locality—East Simcoe—that I proposed to speak. I was never in *Northern* Ontario and an apple which might do exceedingly well here might, and very likely would prove a failure "up North." We hardly like to have it said that Orillia is in Northern Ontario; but I do think that we are just in about the right spot to grow apples for Northern Ontario, and the fruit table that we present to this meeting of the Association shows that we only need to plant and grow the right kinds to be able to supply not only Northern Ontario with choice apples, but also to send a good many into the more southern sections of the Province. Since I have taken an interest in our Horticultural Society the quality of the fruit shown at our fall fair has improved at a wonderful pace with—as regards apples—a corresponding increase in the quantity and also in number of standard varieties; there is still room for improvement not only in quality but for a much greater quantity. The great mistake that has been made here is in planting too many summer and fall apples and going in for everything that is new and high-priced, especially if the nursery agent claims it to be something extra. I am not driving at friend Fisher now, I do not think he is any worse than the rest of the agents.

But, now that we have the Experimental Stations I suppose that in a few years we will be able to now just what to plant in every section to give the best results, especially if the Government will pass a law that no new kinds shall be sold as *first-class* kinds until they have been thoroughly tested at the stations and proven to be worth planting. I will now just speak of a few kinds of apples that apparently are doing well in this locality: In fall apples the "Duchess" does the best of all, but we already have too many of them planted, it is, however, an excellent tree to graft less hardy kinds on. The "Wealthy" is doing exceedingly well and bears early, being later than the "Duchess." I would prefer to plant it largely; the "Wealthy" keeps *well* until the middle of December; in the Association's tables it is classed as a winter apple; this should be changed. The "Snow" suits this locality well, quite hardy and bears well, but the last few years it has been liable to scab pretty badly; I have used the *Bordeaux* mixture on mine this year with fair results. The old "Colvert" is hardy, a good bearer, and almost becomes a winter apple when grown here; it is a first rate fall apple for this locality; I think that is about as many fall apples as it is desirable to plant. The great trouble in grow-

ing winter apple trees here is, I believe, in the way our winters come on ; the ground is seldom frozen to any depth, before it is covered with snow—and often the ground is soft all the winter—then in spring growth starts too soon and trees are killed. It is not "winter killed" with us, but "spring killed ;" and all trees that grow late in the fall are pretty sure to get nipped either with a sudden coming on of winter or too early growth in spring. The "Golden Russet" and "Roxbury Russet" are both doing well here ; the "Ribston pippin" does fairly well and no orchard should be without it. There were some very fine "Blenheim Orange pippins" shown here this fall, the owner says the trees bear well. The "Tatman Sweet" does well and is an excellent tree to graft other kinds on that are not so hardy. We have had some fine samples of the "Wagener" shown at the fair, it is a choice apple, but I do not think it is hardy enough for here ; I had two trees, they both "winter killed ;" but I have some fine grafts of it growing in a "Duchess." I might say I have 30 or 35 different kinds of apples grafted as an experiment, but only two or three of them have yet commenced to bear. Of the newer sorts that are bearing in this neighbourhood the best in my estimation is the "Pewaukee," it is a fine hardy tree, bears every year with me, and I consider it a choice apple. The "Mann" is just beginning to bear, a very fine looking apple, the trees appear to be hardy and thrifty and I think it will be worth planting. The "Fallawater" is another just coming in, a very thrifty growing tree, and a beautiful apple ; and if it does not prove to be a shy bearer, should be in every orchard. The "Ben Davis" does exceedingly well here, sells first-class so far, and on account of its good bearing and keeping qualities is a desirable tree to plant. The "Twenty-ounce pippin" does very well and is a good keeper for a fall apple and rather desirable to plant. There is one more that I wish to speak of, it is all right in quality, the tree is hardy, a thrifty grower and bears every year, but as to size and appearance, *there it is :* (it is the "Wallbridge") about as good-looking and as big as they can be grown about here, and if that is the best that can be done, one tree is enough for anyone to have—it was boomed by the nursery men, 8 or 10 years ago and a good many were planted.

If every farmer in East Simcoe who has 50 or 100 acres would plant 5 or 10 acres to orchard, of 5 or 6 of the best sorts I have named above and take care of them when planted they could say in 12 years from now that I gave them the best advice, at the Fruit Grower's Association meeting in Orillia, that they ever had and all for nothing.

The Secretary read an invitation from the Medical Superintendent of the Ontario Asylum for Idiots to the Association to visit that institution during the time of the members in the town.

SECOND DAY.—MORNING SESSION.

WEDNESDAY MORNING, 11 o'clock.

A paper on "How may the membership of the Fruit Growers' Association of Ontario be increased," was read by Mr. Thos. Beall, of Lindsay.

THE MEMBERSHIP OF THE FRUIT GROWER'S ASSOCIATION OF ONTARIO SHOULD BE INCREASED.

BY THOMAS BEALL, LINDSAY.

To those who have given the subject due consideration, it seems incredible that the Horticultural Journal and Annual Report of this Association, when it contains so much useful information to fruit growers, whether they be villagers having their quarter-acre lot, or orchardists having large farms, should have such a limited circulation. The membership, which is little over 2,000, should, and may be increased in a few years to ten times that number.

Upon a careful survey of the subject for the purpose of finding some way of materially increasing our membership, it has been found that the means by which it may be accomplished is already provided in the Agriculture and Arts Act.

The provisions of the Act relating to this subject are upon such broad and liberal principles that the reader of the Act may well be astonished that every township and horticultural society in the province has not, long ago, become affiliated with this Association. Sections 46, 47 and 48 provide for the organization and maintenance of township and horticultural societies in a liberal manner. It is quite evident, however, that the officers and members of these societies have generally given no attention to the provisions of the Act relating to the several purposes to which the money may be applied, and I here copy in full sections 37, so as to give its provisions prominence.

"37—(1) The objects of the said societies, and of the township societies in connection therewith, shall be to encourage improvement in agriculture, horticulture, manufacture, and the useful arts."

"(*a*) By holding meetings for discussion and for hearing lectures on subjects connected with the theory and practice of improved husbandry or other industrial processes."

"(*b*) By promoting the circulation of agricultural, horticultural and mechanical periodicals."

"(*c*) By importing and otherwise procuring seeds, plants and animals of new and valuable kinds."

"(*d*) By offering prizes for essays on questions of scientific inquiry relating to agriculture, horticulture, manufactures, and the useful arts."

"(*e*) By awarding premiums for excellence in the raising or introduction of stock, the invention or improvement of agricultural or horticultural implements and machinery, the production of grain and of all kinds of vegetables, plants, flowers and fruits, and generally for excellence in any agricultural or horticultural production or operation, article of manufacture or work of art."

"(2) The objects of horticultural societies shall be the same as those of district and township agricultural societies, but in relation to horticulture and arts only."

It is evident, therefore, that there are five ways in which the funds of these societies may be used; these may be summarized as follows, viz:

1. By holding meetings for discussing and for hearing lectures on subjects, connected with the objects of the society.
2. By promoting the circulation of agricultural and horticultural literature.
3. By importing and otherwise procuring new and valuable seeds, plants, etc.
4. By giving prizes for essays on subjects connected with the objects of the society.
5. For holding exhibitions and awarding premiums for things connected with agriculture, horticulture, etc.

The fifth and last sub-division—that permitting the holding of exhibitions—is the only one generally acted on, but it must be apparent that if the funds were expended as provided by either of the other sub-divisions, or partly under all of them, the expenditure would be as legal as under the fifth.

It is difficult to understand why towns and villages have not further availed themselves of the provisions of the Act and established horticultural societies in their midst, except on the supposition that the directors of such societies supposed they had of necessity to expend the funds in holding exhibitions, and in no other way, while they knew that but little or no public good has resulted for many years from such local exhibitions: and this applies also to many of the township societies. Not to all: some of them are yet doing good work.

There are, however, many other reasons why so little interest is taken in township and horticultural societies under the present prevailing system of management. It is well known that the labor and care of managing such exhibitions devolves mostly on the same persons from year to year in each society, and they must also expend much time

every year in begging their fellow-citizens for their membership fees. Not a pleasant job at best, and this unpleasantness is greatly increased by the knowledge that but comparatively few of the members partake of the pecuniary benefits resulting from such exhibitions. Those who receive the prize money generally render the least assistance.

The suggestions offered as a remedy for this state of affairs are: That township and horticultural fairs or exhibitions—as a rule—should be given up, and that the provisions of the Act be so administered that each and every member of such societies should receive equal advantages, and this can be done by expending the societies, money as provided by any or all of the first four sub-divisions of sub-sec. 1 of sec. 37 of the Act. By referring to these sub-divisions and to sections 58 and 59, it will be seen that under intelligent management every member of all such societies may also be a member of the Fruit Growers' Association which will entitle him to the Horticultural Journal for one year. bound copy of the report and a share in its distribution of plants, etc. He may also receive two or three dollars' worth of the choicest plants, bulbs, shrubs or trees procurable; all for the usual fee of one dollar, and the directors should still have funds on hand sufficient to defray the cost of holding two or three meetings each year for discussing local agricultural and horticultural matters.

If these suggestions are carried into effect the Fruit Growers' Association of Ontario will very soon number 10,000 members, and who can estimate the benefits which would be derived by the circulation of so many thousands of copies of our publication amongst an interested agricultural population? At present the circulation of our journal is mostly confined to our towns and villages. The agricultural population—those who are most in need of the information sent out, are not yet reached.

When the agricultural population of that portion of Ontario embraced between the 44th and 45th degrees of north latitude become fully aware of its possibilities for the production of fruit, and have proven by practical experience that in this belt there can be profitably produced the best winter apples on this continent; then the province of Ontario will become known as the best home for the surplus Anglo-Saxon race on the face of this globe.

The SECRETARY: I am inclined to think that we as an association approve of the lines laid down by Mr. Beall in this paper, and approve of the exertions of the executive committee in carrying out this plan to a certain extent. This has been tried during the last year or two and where the local organizations have been formed under this scheme, they have worked most succesfully, and appear to be permanent organizations.

Mr. RACE: You have formed several local societies is this vicinity, have you not?

Mr. BEALL: I have excellent societies at Lindsay and Port Hope.

REPORT OF AFFILIATED SOCIETIES.

The SECRETARY: There are several affiliated societies, and we have not sufficiently recognized their existence in a public way. We want delegates from those societies to come to our meetings and tell us what they are doing. To-day we have two representatives from the Burlington Horticultural Society, Mr. Geo. Fisher and Mr. A. W. Peart.

Mr. PEART (Burlington): I may say that our Burlington Horticultural Society was organized some five years ago, in 1889. The first year we had a very small membership, probably fifteen or sixteen, but from that time down to the present, we have been gradually increasing, until now we have over seventy members in good standing. I may say that we are not organized under the Agriculture and Arts Act, although we are affiliated with the Fruit Growers' Association. One reason is that the majority of the fruit growers in that district live in the township of Nelson, and one of the provisions of the Agriculture and Arts Act is that the majority of the directors of an Association must live within the municipality of the village or town, as the case may be. I will point out another difficulty; for instance, we have different departments of fruits and a director

for each department, a director for pears, etc. At our annual meeting it is the duty of each director to give a report on his particular department for the past year. I think you will all agree with me, that it would be rather difficult for us to organize under the Agriculture and Arts Act. I do not know that I have anything else to report. Our society is strong and is growing all the time. We have to compete with other societies, as the Nelson Agricultural Society and the Farmers' Grange, but with a little effort we increase our membership. We send in at least fifty names to the secretary of the Fruit Growers' Association of Ontario.

The SECRETARY: You have frequent meetings?

A. W. PEART: We meet four times besides the annual meeting. The annual meeting is held on the last Tuesday in January. We have papers or addresses given by practical members of our Society and followed by discussion. We consider that this local association is a grand thing. There is no doubt that the formation of the Burlington Horticultural Society has stimulated the fruit industry in that locality.

The SECRETARY: You might mention the papers you have had this last year.

A. W. PEART: This last year we have considered the subject of spraying, the apple crop of last year in its different bearings, the extent of crop and quantity of fruit. This was applied to all the different fruits. Then we have had papers on current culture, black knot, and I may say here that in our township we are taking vigorous steps to stamp out the plum knot. We have taken advantage of the new Act concerning the knot and have had two inspectors appointed for the township of Nelson. The black knot is about running our cherry trees. A few years ago the black knot swept through that part of the country ruining the plum trees, but did not touch the cherry trees. New plum trees are now being planted out, but red cherry trees are dying from the effects of black knot.

Mr. RACE: That seems to raise the question: Is the fungus the same on the plum and the cherry?

Mr. PANTON: The same fungus causes both. It is a disgrace for anyone to allow it to spread. Wherever a knot is seen, it should be destroyed at once.

Mr. C. L. STEPHENS (Secretary Orillia Horticultural Society): Our society which was established about eight years ago, is not conducted along the lines laid down by Mr. Beall. The exhibits of fruit at our fall fairs have increased five hundred fold, both in quantity and quality of fruit. We get just enough members, chiefly in the town, to enable us to draw a government grant. We then affiliate with the electoral society and throw all our funds into that, but retain control of them. We have not affiliated with the Fruit Growers' Association, but it is our intention to do so.

Mr. RACE: Mr. Beall made the statement that the publications of our Association was limited largely to towns and cities. That is true to a large extent, but I find this, that wherever our journal has circulated there is a more lively interest taken in fruit growing. Mr. Stephens has given us a new idea in uniting, as they have done, with the district Association, for by that means they are able to give larger prizes which is more encouragement to the farmers to bring out their fruit.

REPORT ON GRAPE CATALOGUE, 1894.

The SECRETARY: Mr. President, I propose that we take up the grape catalogue. Mr. M. Pettit, as one of the experimenters, in his report does not agree altogether with values given in our catalogue. It is quite open to this meeting to make any changes. Mr. Pettit will suggest some.

Mr. M. Pettit here read the following list of proposed changes:

The Executive Committee, of Winona Experiment Station, viz.: Messrs. M. Pettit, Wm. Orr and L. Woolverton, with Mr. A. M. Smith, director of adjoining district in

consultation, after carefully comparing the report of this station on varieties of grapes with grape catalogue, published by the Ontario Fruit Growers' Association, have decided that the values of certain varieties in the latter should be changed as follows:

Varieties.	Catalogue Value.		Change Recommended.	
	Table.	Market.	Table.	Market.
August Giant	1	3	5	5
Barry	5	6	7	7
Catawba	9	8	9	9
Creveling	6	3	6	4
Dracut Amber	1	7	2	4
Duchess	1	7	5	6
Eumelan	6	4	6	5
Lady	7	5	8	8
Massasoit	6	5	6	7

The minor discrepancies between the Experiment Station report and that of our catalogue, we think it unnecessary to attempt to harmonize, because a little difference in the absolute value of a grape is observable in various soils and climates.

Mr. M. PETTIT: I might just say that in giving the table value of these grapes, that they are judged from the standpoint of grapes grown on clay soil, which makes considerable difference in the flavor. August Giant, a cross between Black Hamburg and Marion. A very showy grape for the table, and, with me, of good flavor. I would consider it marked entirely too low as a table grape. I would raise it to five for a dessert grape.

Mr. R. B. WHYTE: I think that the general experience would be against five for dessert. On light soil it is not good. If it is equal to five on clay soil, and two on light soil, we had better give it the average.

Mr. PETTIT: The Barry is equally as good as the Wilder which is considered one of the best of Rogers black, both in flavor and shipping qualities. Catawba is one of the choicest grapes we have. In the market it outsells any other grape.

Mr. MCNEILL: I would object a little to the market value. In the London market last October I could only get 3c. for the finest Catawbas, while Niagara, and other grapes were selling for 4c. I also received a telegram from Ottawa that they were not selling well there.

Mr. PETTIT: I cannot understand that; I sent Catawbas to Ottawa at 5c. f. o. b. There has been no year for the last ten years when my Catawbas have not brought me at least 5c. a pound. Dracut Amber is a very poor flavored grape. Duchess is a good grape. It is in white what the Delaware is among red grapes, and is marked too low.

A. MCNEILL: You have different taste. I would not consider it worth more than two or three at the most.

M. PETTIT: The Eumelan is an early black grape and ripens before Concord which makes it valuable in the market. Lady is the first white grape in the market. It is a good flavored grape. It is also a choice dessert grape.

THOS. BEALL: Do you think it should rate higher than Jessica for table use.

Mr. PETTIT: Yes. It is a more showy grape, and better in flavor to my mind.

The SECRETARY: In moving that as an Association we approve of Mr. Pettit's report, I might explain that Mr. Pettit, as one of the experimenters appointed by the Board of Control of the Ontario Fruit Experiment Stations, in making out his excellent report, does not agree in the values of some of the grapes with the published report of our Association, and, in order to harmonize them as far as possible, he has suggested these changes.

A. M. SMITH seconded the motion.

A. H. PETTIT: We are continually changing these standards. Why would it not be well to name experimenters in the southern, western and northern districts and have these representatives meet here on one of the days of our meeting and bring in a report for the several districts.

The SECRETARY: Allow me to say that Mr. Pettit and Mr. Caston have met and agreed upon the changes now before us.

The motion was carried.

APPLE AND PEAR CATALOGUE.

The SECRETARY: Mr. President, the report on changes in apples and pears will be given by Mr. Caston. There are four stations established and one of them is at Craighurst and is devoted to apples and another at Trenton devoted to apples and pears. There two experimenters have met and agreed upon the following report:

RECOMMENDATION FROM EXPERIMENTERS CONCERNING FRUIT CATALOGUE.

We, the experimenters of the Fruit Experiment Stations of Ontario, having considered carefully the values of certain varieties of apples and pears, recommend the following changes:

Varieties.	Dessert.	Cooking.	Home.	Foreign.
Buffam pear	5	.....	4	
Apples.				
Tetofsky	7	9	6	0
Tolman Sweet	6	5	3	4
St. Lawrence	7	8	8	5
Hurlbut	8	8	8	8
Fameuse	10	5	10	8
Grand Sultan	5	8	6	6
Benoni	10	8	4	7
Ben Davis	1	3	8	9
Beauty of Kent	6	6	8	7
Bailey Sweet	4	8	4	4
Duchess of Oldenburg	6	10	10	10
La Rue	4	9	8	8
Colvert	3	9	7	8
Maiden's Blush	3	8	9	8
Pewaukee	6	8	8	8
McIntosh Red	10	7	7	8

Signed, G. C. CASTON.
W. W. HILLBORN.
W. H. DEMPSEY.
M. PETTIT.

Mr. CASTON: In the list the Ben Davis apple is not rated at all for dessert. A great many shippers through the country would tell you that they make more money out of Ben Davis because of its color. The tree bears early and abundantly, and stands shipment to England better than any other apple.

A. H. PETTIT: In Wisconsin, its native country, it is rated very low. It is not a dessert apple.

J. A. MORTON: I object to putting it at 5 for cooking when you give the Baldwin only five for cooking. The Baldwin is a better apple than the Ben Davis, although neither of them is a very good keeper.

A MEMBER: My opinion of Ben Davis is that you cannot eat it at all. It is a wooden apple, but I am told it is a good shipper and that it will keep until June.

A. MCNEIL: The Ben Davis in January or February is a good apple, and certainly equal to the Baldwin. We have not an apple growing section (Windsor); our apples mature too soon. We cannot grow winter apples, and it is possible that the Ben Davis may be a different apple with us, but certainly in its season it is good.

Moved and seconded that it be raised one point for dessert. Carried.

W. H. DEMPSEY: I think it is quite right that for some parts of Ontario the Ben Davis should not be estimated any higher, because I do not think it is good in flavor in any place except the eastern and northern parts. The Ben Davis is really better than many people think, but a great many people have got prejudiced against it. I rate it three for cooking.

Mr. A. H. PETTIT: You have decided that the Ben Davis is worth one for dessert, three for cooking. Now for home market it is valued eight. I think you must cut that down a little.

J. A. MORTON: I do not think the quality should be considered in estimating its market value. As people become educated enough to know it, it may make a difference. The question is, compared with other apples what is its value.

A MEMBER: I saw a barrel of Ben Davis sold for $4 in the town of Lindsay. I would say it is a good apple for the home market.

G. C. CASTON: The Duchess of Oldenburg we would raise from two to six for dessert, ten for cooking, ten for home market and ten for foreign market.

Mr. MORTON: Do you think that ten is rather high for foreign market?

Mr. CASTON: Possibly so.

The SECRETARY: Mr. Shepperd, of Montreal, shipped this apple to England, in the Cochrane case, and received a very high price for it.

A MEMBER: Mr. Allan told me that he sold them in England at 18s. 6d.

Mr. CASTON: I might sum it up as the very best apple introduced into Canada. We next have La Rue. We suggest four for dessert, nine for cooking, eight for home market and eight for foreign market. It is a splendid cooking apple. It is really not a good dessert apple as it is rather too large.

Mr. CASTON: Pewaukee, we have put it at six for dessert, six for cooking, eight for home market and eight for foreign market. I presume a good many people do not know this apple in its right season.

J. H. TOOL: I do not think you have marked it high enough for dessert. I move that it be put eight for dessert.

J. A. MORTON: I think that is too high. One thing against it is the looks of the apple. It is too big and has an irregular shape. Two elements should be taken into consideration, not only quality but also the appearance of the apple. I do not think it is up to the standard in quality. I think it should be valued at six.

This was agreed to.

Mr. CASTON: The Fameuse we have valued at ten for dessert, eight for cooking, nine for home market and ten for foreign market.

J. A. Morton: If you are giving the Fameuse ten, what are you going to give the McIntosh Red. Every one that I have heard speak of them places the McIntosh Red far ahead of the Fameuse.

A resolution was duly passed, rating the Fameuse ten for dessert, five for cooking, ten for home market and eight for foreign.

Mr. CASTON: There is no apple yet that takes the place of Fameuse as a dessert apple. Talman Sweet we put at six for dessert, nothing for cooking, three for home market and four for foreign market. My experience is that you cannot sell it at all.

A. M. SMITH, St. Catharines: It is one of the best baking apples. The Dutch use it largely for apple butter.

Mr. RACE, Mitchell: I buy more Talman Sweets every year than any other apple and use it for baking.

Mr. SMITH: I move we accept these changes except that for cooking it be raised to five. (Carried.)

A MEMBER: I move that the McIntosh Red be raised to ten for dessert. It is one of the best apples we have for dessert.

Mr. WHYTE: It is a very fine apple. I second the motion. (Carried.)

J. P. COCKBURN: I suggest that the Wealthy apples be changed from winter to fall in its classification. (Carried.)

SECOND DAY—AFTERNOON SESSION.

The PRESIDENT: We are very pleased to see that there are so many gathered in so early. We will now take Mr. Beadle's resolution.

Mr. BEADLE: The committee on resolutions desires to present this resolution to the meeting: "Resolved, that the thanks of the association be given to Prof. Panton for his very valuable and instructive lecture on the Fungi. We desire to express to him our great appreciation of the great kindness shown by him in coming to our meeting and entertaining us for an hour at so great inconvenience and with such entire self-forgetfulness." Carried.

Prof. Panton thanked the members for the very cordial manner in which they expressed their appreciation of his effort. He did not know when he had stood before a more appreciative audience.

SCORE CARDS FOR JUDGING FRUITS.

The PRESIDENT: I dare say most of you will have recognized the difficulty of securing united judgment of fruits at our fall fairs. The secretary will now deal with that question.

Secretary Woolverton then read the paper as follows:

Already the Ontario Fruit Growers' Association has taken steps to secure greater uniformity and fairness in the judging of fruits at agricultural and horticultural exhibitions throughout Ontario. The fruit catalogue published annually in our report, is referred to by intelligent judges for final appeal in disputes concerning the value of varieties, but, it is not, however, used as widely as it should be. Some judges make free use of it in judging their collections, while others pay no attention whatever to it and jump at hasty conclusions.

I think it most important that we should pursue this matter still further until we are able to furnish every secretary of every agricultural and horticultural society with a score card for the use of their judges.

True, it requires a great deal more time to judge fruit in this careful way, assigning to each variety its value on some systematic basis, than it does to merely jump at conclusions from the general appearance of the collections, but such careful work amply repays the time it occupies. As conducted at present, our fairs fail entirely in accomplishing the end for which they were intended. They do little or nothing in educating the public with regard to the real value of the varieties shown, or in directing planters concerning the most profitable or most useful kinds to plant for the various purposes. No doubt there are some judges who take into consideration more than merely the appearance of the collections, but, if they do base their decision on some sensible list of points, the public do not know what these are and consequently are no wiser in this

respect than they were before. Now, if a score card were used with clearly defined points showing every investigator the points taken into consideration in giving the decision, and showing the real value of each variety as made up of the various points of merit which it possesses, the public would take great interest in reading these over and would soon become educated regarding the important points which guide the judges in estimating the value of varieties, and planters also who are about to plant orchards would be able to do this much more intelligently after having made a study of the exhibits at the various fairs.

I do not propose to give you a form for a score card that would be beyond criticism. I simply place before you two or three forms with the object of stirring up that careful discussion on this subject which it so well deserves, and hope that either in the open meeting or by the aid of a committeee, we will be able to prepare such a score card as will secure the approval of this whole association. These should then be printed in quantity and a sample of them sent out to the secretary of each agricultural and horticultural society in our province.

I think it is important that not only the judges should use these, but also that the public should be fully acquainted with them, in order that the exhibits may be made with greater intelligence than they are at present.

Here is a sample of the card proposed for judging single plates of apples and pears :

Apples and Pears.	Value of points.	Score.
Form	10	
Size	10	
Color	10	
Freedom from blemishes	20	
Uniformity	20	
Quality	30	
Perfection	100	

Then for judging collections of apples and pears, I presume quite a different form, perhaps this one for a large, general collection :

Variety.	*Value of samples.	Catalogue value of variety.	Total points.
(For example.) Baldwin	5	22	27
To sum of total points add maximum of 10 for covering season.			

* 10 points as follows : form 1, size 2, color 2, clearness 3, uniformity 2.

On this card the list of varieties may be entered, the value of the sample shown, and the absolute value of the variety as shown in our apple or pear catalogue as the case may be. The sum of these will be the number of points gained by the variety in the collection and the total value of these sums will be the total value of the collection.

Thus, the value of the sample of Baldwin shown may be only five, out of a total of ten possible points, the absolute value of the variety as shown in our report is twenty-two, and adding these together we have twenty-seven as the total value of this variety in the collection.

I have made ten the maximum in this case, rather than one hundred, for the sake of simplicity. On a large collection it will be best to just keep in mind the relative value of the points, and to work out the value of each sample mentally on that basis.

For a collection of varieties for dessert purposes a somewhat different card should be used. Thus:

Variety.	*Value of samples.	Catalogue value of variety.	Total points.
Baldwin (For example.)	5	2	7
To sum of total points add maximum of ten for covering season.			

* 10 points as follows: form 2, size 1, color 2, clearness 3, uniformity 2.

And for cooking, the following will be adapted:

Variety.	*Value of samples.	Catalogue value of variety.	Total points.
Baldwin (For example.)	5	5	10
To sum of total points add maximum of ten for covering season.			

* 10 points as follows: perfection of form 1, color 1, size 3, uniformity 2, freedom from blemishes 3.

In these two last forms instead of taking the total value as given in our catalogue, the value there given for dessert or cooking should be used respectively. Thus, the sample of Baldwin, which, on account of lack of color, lack of uniformity, and for blemishes, only has a value of five, gets two additional points only as a dessert apple; while for a cooking apple the same sample Baldwin is worth five marks, making the value of this variety in the collection ten, for cooking.

For judging grapes of course quite a different set of points must be observed from those used in judging apples and pears. I would propose for single plates:

Grapes.	Value of points.	Score.
Flavor	30	
Form of bunch	10	
Size of bunch	15	
Size of berry	15	
Color	10	
Firmness	5	
Bloom	5	
Freedom from blemishes	10	
Perfection	100	

The following might be used for collections of grapes :

Variety.		*Value of sample.	Catalogue value of variety.	Total points.
Concord	For example.	8	21	29
Delaware		6	26	32
Lindley		5	28	33
Niagara		9	22	31
Pearl		8	4	12
				137
Add maximum of ten for covering season				6
				143

*10 points as follows : flavor 3, form of bunch 1, size of bunch ½, size of berry 1½, color 1, firmness ½, bloom ½, freedom from blemish 1.

Potatoes and Tomatoes.

The Massachusetts State Board of Agriculture has established a scale of points for judging vegetables. Pamphlet forms, containing cuts and scale of points for two or three of the finest varieties of all the different vegetables, are being issued for the use of the incorporated Agricultural Societies. This is one advance needed by all agricultural societies, as very often men are appointed to judge at shows who differ very widely in their ideal of a perfect specimen, and by having an authorized scale of points to guide them a much less unjust decision will often be given. As an example of their plan, we give scale of points given for "Beauty of Hebron" potatoes :

Size—Should be 4½ inches long and 3½ inches wide for perfection, 30 points.

Form—Should be according to engraving, as given in pamphlet, 30 points.

Smoothness—Free from deep pits, warts, or excrescences, 30 points.

Quality—Fresh appearances, freedom from coarseness, and bright color, 10 points.

Total 100 points.

The following is the scale of points for tomatoes :

Form—Should be according to engraving, 40 points.

Color—Should be bright red or purplish pink, according to variety, 30 points.

Size—Should be not less than 2½ inches and not more than 3½ inches in diameter, 15 points.

Quality—Firmness, ripeness, and freedom from green spots or cracks, 15 points.

As such a manner of judging fruits would entail a great deal more labor than the plan now adopted, I suggest that only one judge be appointed in each section, instead of three, as at present, and that this one judge be an expert and one who has the confidence of the exhibitors as well as of the authorities. Further, I recommend that this judge should be allowed the amount now paid to the three. In this way there would be sufficient compensation for the work done, and better work would therefore be secured. One judge would work almost as fast as three, and, if properly paid for his time, could afford to do his work well.

A committee was appointed by the meeting at Orillia to consider this subject and report. The committee recommended the adoption of the score cards, with the amendment that in awarding the points for every season, in collections the maximum be computed on a basis of five points for each variety shown in such collection, instead of allowing ten marks as a maximum in all cases.

Secretary WOOLVERTON : I move that a committee of three be appointed to consider the score cards as proposed—one who has been judging grapes, one who has been judging apples, and so on.

Mr. BEALL moved that the president, Murray Pettit, and A. H. Pettit be the Committee. Carried.

PROGRESS IN SPRAYING DURING 1894.

Mr. JOHN CRAIG, Horticulturist Central Experimental Farm, Ottawa, read the following paper:

No line of work associated with the successful culture of fruits at the present time is charged with greater interest to the horticulturist than is the subject of this paper. It is also true that no other advance in horticultural practice has been so readily taken up by the more progressive and practical and discussed by the theoretical and procrastinating class. Third and fourth classes may be made of those who have tried without success the remedies recommended, and those who disbelieve and have not tried. But honest doubt should always be respected.

Again, there are few if any operations now included in the annual programme of the fruit grower the success of which is so dependent on conditions practically outside the control of the operator than is spraying. Meteorological conditions, as rain and wind, heat and cold, bear a marked influence on the results, and often discourage a beginner from carrying into practice good resolutions formed at the opening of the season. An unfavorable season will so frequently mar the effect of conscientious effort as to place in doubt the beneficial results, thus shaking the confidence of the beginner.

Before taking up the subject of this paper, namely, the result of the season's work, it might prove interesting to preface it with a brief history of the introduction of the practice of spraying.

HISTORY OF THE PRACTICE OF SPRAYING.

In 1882 Professor Millardet, an eminent botanist of Bordeaux, France, had his attention called to the fact that grape vines sprinkled with a mixture of bluestone and lime to deter the inroads of boys and vagrants, were much less attacked by mildew than other vines not so treated. Acting on the suggestion conveyed by this object lesson, he carried on experiments during 1883 and 1884, and gave to the public the result of his work on May 1st, 1885. As Mr. Fairchild, of the Department of Agriculture, Washington, says in an excellent article recently published on Bordeaux mixture as a fungicide : "It appears that to Millardet is due the credit of first correctly interpreting the immunity shown by the treated vines in Medoc, and of conceiving a practical method by which copper sulphate could be used as a remedy for the disease in question."

The news of this discovery was soon chronicled in America, and bulletins of recommendations were issued by the Department of Agriculture at Washington and the California experiment station early in 1886. The following two years gave to the public the results of experiments conducted in the United States, and established a formula for Bordeaux mixture which has been more or less generally accepted and has become in a measure a standard. This formula was recommended by Mr. Galloway, chief of the division of vegetable pathology at Washington, D.C., and consisted of 6 pounds of copper sulphate and four pounds of lime in twenty-two gallons of water. The first formula however, was much stronger than this and contained eighteen pounds of copper sulphate and about 30 pounds of lime to which was added 30 gallons of water. Such a mixture resembled a thick paste and was applied by means of wisps of straw or brooms. Many other mixtures were soon introduced and tried by the active American scientists, principally on account of the difficulty of applying the concentrated form of Bordeaux mixture. In the spring of 1890, the first year of the appointment of the writer as horticulturist to the Central Experimental Farm, Ottawa, experiments were planned and carried out in

orchards at Abbotsford, Quebec. The experiments were designed to show the benefit of spraying with ammoniacal copper carbonate in varying proportions, copper sulphate of varying strength, and the value of hyposulphite of soda as a fungicide. The variety treated was Fameuse, and the results gained demonstrated the profit of spraying with ammoniacal copper carbonate of the strength since recommended by the horticultural division of the Experimental Farm. Experiments have been continued each year up to the present, but marked more or less according to season. In the initial stages of this work the important question of economy and ease of application in addition to the effectiveness had to be studied by the experimenters, so that a remedy, when discovered, might be practicable and thus commend itself generally to the public.

These experiments covered the trials of over thirty spraying mixtures, and among the fruit included were apple, pear, plum, cherry, peach, and the majority of the small fruits.

Owing to the difficulty of applying and the cost of making the concentrated Bordeaux mixture, many other copper salt compounds have been tried, with the result that many were discarded while a few were recommended for trial. Copper sulphate or bluestone having entered into all mixtures giving favorable results, the number of formulæ recommended have gradually lessened with each year's experience till at the present time, while we have yet much to learn, the fruit grower need not burden his mind with a bewildering array of recipes or formulæ, almost as numerous as the legion of enemies which attack his orchards and vineyards.

As a result of experiments conducted in 1892, the writer recommended a modified formula for the preparation of Bordeaux mixture. This was given to the public by means of bulletins and circulars during 1892 and 1893. The formula is as follows: Four pounds of copper sulphate, four pounds of lime and fifty gallons of water. The cost of this need not exceed one-half cent. per gallon, and admits of the addition and application of Paris green. At the same time coupled with this was ammoniacal copper carbonate, which will not be used as freely as Bordeaux mixture on account of its greater cost and the increased labor of preparing it. For spraying late in the season when stains on the fruit are undesirable, it is the most useful agent yet discovered. In copper sulphate we have the base or foundation of both the above mixtures, and a very effective fungicide to apply before the foliage appears. With this trio, backed up by intelligence and perseverance, the fruit grower may largely increase his orchard revenue.

Experimental Work in 1894.

I firmly believe that through the co-operation of the Fruit Growers' Association of Ontario, the value of this work has received such an emphatic confirmation that the resulting impetus will place the practice of spraying to lessen fungous injury, as well as insect attacks, on a plane well out of the reach of controversy. While the benefits arising from the practice have been satisfactorily proved by the writer, as well as by leading fruit growers, and the system strongly advocated, yet conflicting results obtained here and there continually threw a dark shadow, and gave rise to doubt and discussion. This, I am happy to say, culminated in a resolution moved by the retiring President, Mr. A. H. Pettit, at the last meeting of the society held at Peterboro'. This resolution read as follows: "That in the opinion of this meeting it is desirable that our Director of the experimental farms be requested to make during the coming season at several centres of fruit culture a public, practical test of the efficacy of the solution recommended for the prevention of the scab on apples." The Minister of Agriculture for the Dominion at once recognized the immense interests involved, and was pleased to authorize the experiments, the writer being commissioned to carry them out. Experiments were instituted at seven different centres in the Grimsby and St. Catharines districts. It is a pleasure to record the cordial spirit of co-operation manifested by the fruit growers of the Grimsby and St. Catharines districts and the helpful manner in which they facilitated the progress of the work. The inauguration of the experiments was unavoidably delayed till May 1st, which, on account of the abnormally early spring, was fully two weeks later than desirable. This, followed by the unprecedented and continuous rains during May

and June, coupled with the scorching heat and drouth of mid-summer and autumn, all combined to form a season with conditions most unfavorable to obtaining even average results. Regarding the character of the weather, Mr. Wm. Orr, of Stony Creek, Ont., writing under date of June 18th says: "We have been laboring under almost unsurmountable difficulties in trying to carry out our spraying programme. It has rained every day, with one exception, for 21 days, and plowed ground has been like a mortar bed. It has even been impossible to get upon well under-drained land part of the time." The same condition of affairs is chronicled by Messrs. M. Pettit, A. H. Pettit, C. P. Carpenter and E. J. Woolverton in the Grimsby district. Writing from St. Catharines under date of June 5th, Mr. M. Burrell says: "Owing to the disastrous weather we have been at a standstill. For more than two weeks it has been raining daily, and not only has all farm work been suspended, but spraying operations have been impossible on account of the softness of the ground."

Mr. A. H. Pettit says, on June 20th: "We shall again go to spraying as soon as we can float a waggon with the barrel in it."

Following on the heels of the downpour came a period of ideal weather for the development of fungous growth. Never, to my knowledge, has the apple scab (*Fusicladium*) appeared in such a virulent form. The fungus coming before the fruit had much more than formed, attacked the foliage so severely as to cause it to resemble and be easily mistaken for the ordinary twig blight. In many districts apple trees presented a scorched and browned appearance as if suffering from blight and severe drouth. Most varieties lost a large proportion of their leaves, which of course resulted in a corresponding loss of the fruit. This visitation, however, had the effect of emphasizing the value of spraying as a factor having an important bearing on increasing the yield in seasons of severe fungous visitation, as well as improving the quality of the fruit. I mention this now to elucidate the apparent discrepancy in the yields of treated and untreated trees. To sum up briefly, untreated trees lost their foliage and consequently their crop of fruit. Spraying prevented the growth of the fungus on the foliage which was thereby retained and with it a large proportion of the fruit. These are points worth remembering. Peaches, cherries and plums were treated with the two-fold object of preventing loss from a fungous disease causing the fruit to rot on the tree, and insect attacks; apples and pears to prevent injury from *Fusicladium* and insect pests. The results, owing to the difficulties outlined above, were not conclusive in every instance. This was reasonable in consideration that in one or two cases no spraying was done between May 4th and June 5th, owing to the continuous rainfall. Another cause affecting the completeness of the report was the failure of some of the experimenters in the hurry of marketing operations to record carefully the yields of the sprayed and unsprayed trees. Writing of this phase of the question one of the committee very sensibly remarks that "there seems to be a little difficulty in getting reliable statistics as to numbers, weights, etc. When the exact moment arrives for counting specimens and weighing fruit the experimenter will probably be so rushed with other work that the details of the experiment may be neglected and the value of the whole test seriously impaired."

However, I am pleased to state, and I think you will agree with me, that the records which have been secured are sufficiently convincing of themselves to be entirely satisfactory, although it is to be regretted that full returns could not be obtained in every case.

Peaches.

Experiments mainly designed to prevent rot and leaf-curl were carried on in the orchards of Messrs. J. H. Broderick and Eli Gregory & Son, of St. Catharines, Ont., with the help of the gentlemen and the kind co-operation of Mr. Burrell.

The trees should have been sprayed according to the programme outlined in the accompanying calendar, but owing to the earliness of the season the trees were too far advanced to risk the application of copper sulphate. Treatment accordingly began on May 1st with Bordeaux mixture: 4 pounds of copper sulphate, 4 pounds of lime to 50 gallons of water. The second application was made on May 15th. Three ounces of Paris green was added to each barrel of mixture. The trees were treated again on June 4th,

July 11th and July 5th. On account of some indications of injury to the foliage the formula was weakened for the last two applications to three pounds each of copper sulphate and lime and the same quantity of water. Up to July 5th rain was more or less constant. On July 31st Mr. Burrell reported that there seemed to be no difference between sprayed and unsprayed trees in the number of peaches affected by curculio. In regard to rot: "Early Rivers" showed 2 to 4 per cent. rotten on sprayed trees and 5 to 7 per cent. on unsprayed trees. At this time the fruit was beginning to color. The spot fungus (*Cladosporium*) was considerably worse on unsprayed trees. On August 7th "Early Rivers" showed about 6 per cent. of rotten fruit on sprayed trees and 8 per cent. on unsprayed trees. "Early Richmond" gave approximately the same results. As the crop was excessively heavy the amount of affected fruit even on unsprayed trees could not be regarded as harmful, owing to the beneficial effects accruing from this thinning process. In fact the quality of the crop would have been much improved by removing at least 30 per cent. of the fruit which set, a large proportion of which was allowed to mature.

With regard to the leaf-curl, there was none on the treated trees and scarcely a sign of it throughout the orchard. Mr. Burrell noted at harvesting time that in all cases the fruit on the sprayed trees was higher colored than that on the untreated trees. This was undoubtedly due to the absence of the spot fungus already referred to as *Cladosporium*.

Notes taken on September 1st indicate that as far as it was possible to judge by appearances, the sprayed trees carried more and better fruit, and had much better foliage than those untreated. On the matter of pears we have, however, interesting evidence from Mr. M. Pettit, of Winona. Although experiencing much inconvenience from continuous rainfall, he reported on May 26th, that on looking over the sprayed and unsprayed he could see quite a difference in favor of the sprayed trees. "The Beurri Gifford and Flemish Beauty, unsprayed, showed considerable fungus, both on leaf and fruit, while on the sprayed trees there is scarcely any to be found. I also think there is more fruit on the sprayed trees." Writing again under date of November 7th, Mr. Pettit says: "Regarding the yield of pears I am unable to give you exact figures, but I think the sprayed trees of Flemish Beauty had fully 75 per cent. more fruit than those not sprayed. Beurri Gifford, sprayed twice before blooming and regularly afterwards, were loaded with perfectly clean fruit, while trees of the same variety not sprayed until the fungus appeared, which was very soon after the pears had formed, on May 29th and June 9th, were almost entirely destroyed. There was not much difference in the Bartletts sprayed and unsprayed, as they were all a good clean sample this year."

The trees were sprayed with copper sulphate on April 16th, Bordeaux mixture on May 4th, 15th and 29th, and June 13th and 29th. Paris green was added in the later sprayings. The best proof of Mr. Pettit's belief in the work is his statement that he fully intends to spray thoroughly next year. He also concludes, as a result of the season's experiments on pears, that two sprayings before the blooming period are of more value and have more effect than four sprayings after that period.

In the orchard of Mr. E. J. Woolverton, a striking example of the effect of Bordeaux mixture upon Flemish Beauty pears was provided. Of two young trees of this variety standing alongside each other in the same row one was sprayed, the other not treated. On August 29th the sprayed tree was clothed with luxuriant foliage and carried an average crop of clean fruit, while its neighbor, the unsprayed, had lost fully 25 per cent. of its leaves and was almost bare of fruit. The result at harvest time was a bushel of good pears on the one hand and a few inferior specimens on the other.

Let us conclude then that the cracking and spotting of the pear may be prevented with great benefit to the tree by the timely application of Bordeaux mixture, and that in treating these diseases the early treatments are most important.

Apples.

It is gratifying to be able to record results which cannot be accepted otherwise than as absolutely conclusive in connection with perhaps the most important class of fruit which entered into this experiment, viz., apples. The usual difficulties and hindrances

encountered make the results all the more emphatic and valuable. I wish also to state that the work should have been commenced at least ten days earlier than when it was begun, and that the first spraying should have been made with copper sulphate. This is in line with the experience of Mr. Murray Pettit.

An interesting experiment was planned and inaugurated in the extensive apple orchard of Mr. C. P. Carpenter, but was not carried out owing to the condition of the ground, it being so soft as to preclude the possibility of getting horses into the orchard. Thirty-two days elapsed between the first and second sprayings, but the benefit of the first application could easily be seen in August on the foliage of Greening, Colvert, Spy and Early Harvest. Mr. Carpenter also noticed an improvement in the quality of Northern Spy.

The results of the experiments made by Messrs. M. Pettit, E. J. Woolverton and A. H. Pettit are given in the accompanying tabulated statement.

In submitting his results Mr. M. Pettit says that the Snow apples were not quite free of fungus, but much better than last season. Spys were much improved, while the tests on Baldwins was a great success.

Mr. E. J. Woolverton, writing under date of October 25th, says: "I have no doubt that had the experimental plots received an application of copper sulphate earlier in the season the results would have been still more satisfactory; but even now, after all the fruit is picked, it is an easy matter to pick out the treated trees from the untreated, owing to the much richer and more healthy character of their foliage."

Mr. A. H. Pettit, at one time indifferent in regard the value of spraying, and to whom I specially owe my best thanks, not only for inciting the movement, but for most faithfully and conscientiously carrying out under extreme difficulty the entire plan of the experiment as originally laid down, writes as follows:

"I now enclose you a statement of the result of the spraying experiment with *Bordeaux* conducted in my orchard under your direction during the past season; and in doing so I must express my great satisfaction in the results obtained; it has shown the effects in such a marked degree.

"The experiment you conducted here this season has demonstrated to me, and many other fruit growers, that spraying with Bordeaux, properly applied and at regular intervals, will be of great practical value in destroying the fungus that is, I believe, causing the unfruitfulness of our orchards. The sprayed trees, aside from the large increase of crop, presented a fine healthy foliage, while those by the side of them, *unsprayed*, showed a very unhealthy appearance and no fruit. I might add, that while the fruit on the sprayed trees was of good size and color it was not entirely free from damage by the codling moth, and on two or three varieties, the American Golden Russet, Fameuse and Swaar were affected by a scab to quite an extent. Now, this may have taken root during our excessive wet weather a few days after the first spraying. I am also inclined to think, although I have no means of knowing it to be so, that the Bordeaux mixture does to some extent destroy the action of the Paris green. Had it not been for the work of the codling moth the percentage of first quality would have been greater.

"Now, I may go a little beyond the experiment proper, having sprayed a number of trees to a greater or less extent. The season, as you are aware, was most unfavorable in some respects, not only for spraying regularly, but for the cultivation of the orchard and vineyard. The extreme wet being followed by the rapid drying up of the land, I was pressed for time to get what spraying I did get done (beyond the experiment proper) with any regularity. Some were done moderately well, while other parts were not done so well, but I can distinctly trace the good effects of the application in the increased production, and also in the improved condition of the foliage, even to the extent of one side—quite a number of the trees producing good results and good foliage on one side, while the other side of the tree was barren of fruit and of unhealthy foliage.

"I believe, sir, that the value of this experiment, so practically demonstrated, will give a wonderful inspiration to our fruit growers to fight straight along this line, and I trust your report will be convincing and as widely distributed as possible, in order that every fruit grower may reap the reward of your and your associates' researches and experiments to destroy the insects and diseases that are affecting our fruit trees and fruits, and

I trust if there are any other doubting fruit-growers as to the benefit of spraying you will convert them at once, even should it be the means of flooding the universe with clean, choice, Canadian fruit."

The crop of peaches in Mr. Gregory's orchard was also uniformly large, and of good quality throughout. So little apparent difference could be noticed that picking records were not preserved. My own notes taken on June 26th and August 29th, indicate that there was less rot on the sprayed trees among the early varieties such as Rivers, Mountain, Rose and Crawford.

To sum up: Experiments on peaches were not attended by marked results owing to the absence in a large measure of fungous diseases, and the presence of an unusually heavy crop of fruit. From the experience of the past season, it appears desirable to apply even a weaker formula of Bordeaux than that recommended, and it is suggested that after the foliage has appeared three pounds each of copper sulphate and lime to fifty gallons of water be used. This formula might be used in treating all stone fruits, although cherries were not injured by the ordinary formula.

Plums.

I am glad to be able to report more definite results regarding the treatment of plums. In Mr. Broderick's orchard a block of plums composed of Munro, Bradshaw and Lombard was selected, and a part of each sprayed on the dates already given. The trees were young, just coming into bearing. Rot was more or less prevalent on all varieties, but the greatest damage to the trees was wrought by the shot-hole fungus (*septoria cerasina*), and in preventing this disease the best results were obtained. Fruit growers well know the effect on the fruit of the loss of the foliage previous to the harvesting period—decreased size and poor coloring are sure to follow.

Notes taken on June 26th and August 29th, emphasize the fact that the foliage of the sprayed trees was vastly superior to the unsprayed. In walking through the orchard the difference in the health and luxuriance of the two series at once made itself apparent.

To obtain accurate data regarding the character of the fruit, two trees were selected as much alike as possible in every respect, one sprayed, the other unsprayed. The fruit of each was gathered and weighed. The sprayed trees yielded fourteen and a quarter pounds of sound plums, the unsprayed twelve pounds. But the difference was most noticeable in the superior size and quality of the fruit from the sprayed tree. One hundred plums from this tree weighed three pounds and nine ounces, while one hundred plums unsprayed, weighed two pounds and one ounce.

The sprayed plums would easily sell as good first, while the unsprayed, owing to small size and lack of color, could hardly be classed as seconds.

Touching the treatment of plums, Mr. Wm. Orr, of Stony Creek, Ont., writes as follows: "Other years we have lost heavily from rot, especially on Duane's Purple and Pond's Seedling, frequently losing the greater part of the crop of these varieties. This year the trees were heavily loaded with fine clean fruit which was marketed without any serious loss from rot. The check trees of Pond's Seedling dropped their fruit early in the season, and the checks of Duane's Purple rotted considerably, although not so badly as they did some other years."

In this connection Mr. Orr states that he found spraying with Paris green effectual in destroying the curculio.

Mr. Burrell, of St. Catharines, also writes that he had two rows of bearing plum trees, the end tree of each row being left unsprayed. "On October 22nd, when these two untreated trees were practically bare the rest were looking green and thick with leaves." I may say in this connection that the Experimental Farm plum orchard, made up of some seventy-five varieties, including many varieties of Prunus Americana, has been kept entirely free from rot by the persistent application of Bordeaux mixture each year in conjunction with Paris green to prevent curculio attacks. Native plums in the vicinity of Ottawa have for the past three years been a failure owing to rot (*monilia*) and the spot disease (*cladosporium.*) In my opinion, no plum grower can afford to omit spraying with Bordeaux mixture and Paris green.

Cherries.

Experiments for the prevention of rot were carried out in the orchards of Messrs. Broderick and Gregory, of St. Catharines, Ont., and E. J. Woolverton, of Grimsby, Ont.

Spraying began with Bordeaux mixture on May 1st, when the blossoms were beginning to open. Three additional applications were made with the same mixture with the addition of Paris green. Records of yields were obtainable from Messrs. Broderick and Woolverton. The former gives the yields of two trees of Yellow Spanish as nearly alike in every respect as possible at the beginning of the season.

Sprayed trees yielded ninety pounds of sound fruit.

Unsprayed trees yielded thirty pounds of sound fruit.

Mr. Broderick adds that the lower branches of the treated tree were well loaded with sound fruit, while there were a good many cherries at the top of the tree which was not thoroughly covered in spraying. This emphasizes the necessity of great care in applying the fungicide.

Mr. Woolverton's results were rather startling in their emphatic conclusiveness. He reports as follows: "Gave cherries three applications of Bordeaux mixture with four ounces of Paris green to fifty gallons of water on the following dates, blossoms having fallen May 10th, May 26th, and June 4th, also one application of ammoniacal copper carbonate on July 4th." Note—June 4th.: "Cherries already show good results; the tree left unsprayed is much inferior in fruit and foliage to the one treated."

July 9th: "Picked fruit on unsprayed tree, yield seventeen pounds." July 10th: "Picked part of fruit on sprayed tree, amounting to 112 pounds; the remainder not quite ripe." July 17th.: "Picked remainder of fruit of sprayed tree, eighteen pounds; total yield, 130 pounds."

"Spraying cherry trees with Bordeaux mixture not only prevents rot, but seems to prolong the growing season, as will be seen from the above dates of picking." He further says that the advantage from spraying these trees is apparent from the following figures which are absolutely correct: Cherries from sprayed trees netted $9.25, and were a choice sample. Cherries from unsprayed trees netted $1.20, and were a medium sample.

These are actual results obtained from two large trees, the advantage being on the side of the unsprayed in point of size of tree and bearing capacity at the time spraying began. One of the lessons this teaches is that in the case of cherries early spraying—that is, before the buds start—is not so important as the thorough and frequent application of the fungicide during the growing period of the fruit.

Pears.

The spotting and cracking of early pears, notably the Flemish Beauty, has for the past few years been a source of great loss to fruit growers. Strong evidence on this subject was submitted by Mr. Orr at the last meeting of the Society at Peterboro'. He also reported failure in preventing the disease by spraying with Bordeaux mixture. The orchard referred to was one of those selected for experiment this year, but unfortunately, owing to the following reasons given by Mr. Orr, no definite results were obtained. He says: "Owing to an extremely wet June, it was impossible to carry out the experiments thoroughly, or as we should liked to have done. The severe drouth in mid-summer seriously impaired the quality and size of the fruit. The soil being heavy clay felt the effects of the dry weather most keenly. A heavy wind storm occurred before harvesting time and blew off the more or less prematurely ripened fruit, which at this time was unfit for market. It was therefore impossible to estimate the value of the work done on pears."

RESULTS OF EXPERIMENTS.

The orchards from which the most complete returns have been received are those of E. J. Woolverton and A. H. Pettit, of Grimsby, Ont. Table I. shows the varieties treated and the percentage of yield of fruit of the different grades after being carefully sorted. Mr. Woolverton's table also shows the relative percentage of windfalls in both series. Having these figures the deductions which appear in Tables II. and III.

are drawn therefrom in order to present the results in a clearer and more convincing manner. In these tables are presented the combined and averaged results of all experiments, and the percentage of gain in yield of fruit of the sprayed over the unsprayed trees. This table shows that the sprayed trees yielded 24 per cent. more of first class fruit and 6 per cent. and 18 per cent. less, respectively, of second and third class.

TABLE I. showing variety treated and percentage of yield of fruit of the different grades.

Variety of apple.	How treated.	Firsts.	Seconds.	Thirds.	Per cent. of total yield.
E. J. WOOLVERTON:		Per cent.	Per cent.	Per cent.	
Golden Russet	Sprayed—Handpicked	36.07	34.86	29.05	80.13
"	Sprayed—Windfall	.....	49.09	50.90	
"	Unsprayed—Handpicked	7.89	52.62	39.48	19.86
"	Unsprayed—Windfall	.....	15.00	85.00	
Baldwin	Sprayed—Handpicked	80.43	19.56	....	100.00
"	Sprayed—Windfall	.....	70.83	29.16	
"	Unsprayed—Handpicked	.....	.....	.....	.....
Greening	Sprayed—Handpicked	55.61	29.75	14.63	93.90
"	Sprayed—Windfall	.....	34.70	65.30	
"	Unsprayed—Handpicked	.....	100.00	.....	6.09
Northern Spy	Sprayed—Handpicked	52.25	41.08	6.66	65.90
"	Sprayed—Windfall	.....	71.42	27.58	
"	Unsprayed—Handpicked	11.83	42.40	45.76	34.09
"	Unsprayed—Windfall	.....	.....	100.00	
Cranberry Pippin	Sprayed—Handpicked	17.04	56.12	26.84	67.94
"	Sprayed—Windfall	.....	36.66	63.34	
"	Unsprayed—Handpicked	2.48	58.70	38.82	32.05
"	Unsprayed—Windfall	.....	36.00	64.00	
Spitzenberg	Sprayed—Handpicked	51.15	41.86	6.99	100.00
"	Sprayed—Windfall	.....	52.63	47.37	
"	Unsprayed—Handpicked	none.	none.	none.	.....
A. H. PETTIT:					
Blenheim Pippin	Sprayed	80.00	20.00	.....	51.72
"	Unsprayed	25.00	53.57	21.42	48.28
Baldwin	Sprayed	75.32	14.34	10.33	100.00
"	Unsprayed	.....	.....	.....	.....
Greening	Sprayed	69.96	20.72	9.32	97.05
"	Unsprayed	13.33	36.00	50.67	2.95
Red Astrachan	Sprayed	54.29	28.96	16.75	75.71
"	Unsprayed	30.11	29.89	40.00	24.29
American Golden Russet	Sprayed	40.00	40.00	20.00	73.17
" "	Unsprayed	27.27	54.54	18.18	26.83
Swaar	Sprayed	28.40	56.80	14.79	98.83
"	Unsprayed	.....	100.00	....	1.17
Alexander	Sprayed	77.14	17.14	5.71	69.30
"	Unsprayed	58.06	29.03	12.90	30.70
MURRAY PETTIT:					
Baldwin	Sprayed	69.70	30.30	.....	.....
"	Unsprayed	27.18	72.82	.....	.....

TABLE II. shows the average percentage of the different grades from all varieties.

	Firsts.		Seconds.		Thirds.	
	Sprayed.	Unsprayed.	Sprayed.	Unsprayed.	Sprayed.	Unsprayed.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
E. J. Woolverton	31.77	5.40	44.53	49.70	23.69	44.90
A. H. Pettit	59.07	36.98	27.36	35.07	13.57	27.94
Average	45.42	21.19	35.95	42.39	18.63	36.42

TABLE III. shows the ratios of the yield of the three grades of fruit.

—	Firsts.	Seconds.	Thirds.	Total yield.
E. J. Woolverton :	Per cent.	Per cent.	Per cent.	Per cent.
Sprayed	94.40	65.90	60.22	74.14
Unsprayed	5.60	34.10	39.78	25.85
A. H. Pettit :				
Sprayed	86.05	75.54	65.08	79.43
Unsprayed	13.95	24.46	34.95	20.57

The effect of this improvement *in quality alone* upon the gross receipts from an acre of bearing apple trees may be shown as follows : Supposing the yield to be 50 barrels we find, according to results gained, that spraying would give at ordinary market rates, $2.50, $1.75, and 0.75, for first, second, and third class respectively, $56.75 worth of No. I. fruit, $31.50 worth of " seconds," and $6.97 of " thirds," or a total of $95.22. The same area unsprayed would give of No. I. fruit $26.75, of No. II. $37, and of third class $13.64, or a total return of $77.40, leaving a balance in favor of the sprayed acre of $17.82. This is supposing that all the " seconds " and " thirds," which in the case of the unsprayed is very large, could be sold. The cost of spraying an acre of apple trees will vary according to the size of the trees ; using diluted Bordeaux mixture and making five applications it need not exceed $6 and may be under $5. There would thus be a net profit of $10 to $12 on the basis of equal yields and improved quality. As a result of the experiments referred to, and looking at spraying as *affecting the yield*, we find that the sprayed trees gave 74 per cent. of the total yield. This return, added to the improved quality, gives a difference in the net receipts of $51.53 in favor of the sprayed acre.

I do not think this side of the argument need be pushed farther, though it would probably prove interesting to know the effect of this on the crop of the province. Each grower will find it to his interest, however, to make a calculation for his own satisfaction on this basis.

EQUIPMENTS FOR SPRAYING.

Where the area to be sprayed exceeds 15 acres it will probably pay to buy a horse power pump. These are now made by several firms dealing in force pumps. One which I have used with satisfaction at Ottawa, during the past season, was purchased from the Field Force Pump Company, of Lockport, N. Y.

Where a barrel is used—and I may say that one of these will answer the requirements of all having 15 acres or less to spray—a strong force pump should be secured. The valves and inside working parts should be of brass, the metal chambers and all castings strong and heavy, and the packing of the most durable character. Nothing is more annoying, and nothing acts more as deterrent to the introduction of the practice of spraying, than the " breakdowns " which occur with irritating frequency at the beginning of the work each year. This matter has been represented so strongly to Canadian firms that I believe satisfactory pumps will be forthcoming next season. I have used with good results pumps manufactured by the Toronto Pump Company, and the Goold, Shapley, Muir Company, of Brantford, Ont., although the first " Ideal " pumps manufactured by the latter firm showed defects under strong pressure ; these I believe, have been remedied. Each pump should be supplied with two lines of hose, the lengths proportionate to the height of the trees, each fitted with a stop-cock. In cases of clogging the stop-cock will always be appreciated. The nozzles which gave greatest satisfaction were the " Vermorel " and the " McGowen ;" the latter is most economical of fluid and should be used exclusively when the trees are small, or upon the lower branches. The McGowen is a valuable instrument for carrying the liquid to the upper branches with

a minimum degree of waste. A bamboo pole through which a brass tube may be inserted, is an improvement over an ordinary pole for the purpose of elevating the nozzle. I wish to impress upon fruit growers the desirability of beginning the season's work with apparatus fully equipped and in good working order, as the ease with which the applications are made influences to a large extent the thoroughness of the work, and upon the thoroughness will depend in a large measure the success attending the undertaking.

Preparation of Bordeaux Mixture.

The ingredients are copper sulphate, lime and water. A good quality of copper sulphate should be secured. As pointed out by Mr. Fairchild, a brand which contains a large amount of iron or zinc sulphate should not be used, although it has not been proved that these ingredients actually injure the mixture. He further states that lime which is made from stone containing a large amount of clay is likely to be what is known as "dead" lime, and to contain small insoluble granules. This kind of lime may be used, but is likely to give trouble unless the resulting milk be well strained before adding it to the copper sulphate. Lime which is air-slaked should not be employed in any case since its use results in injury to the foliage. The method of preparing the mixture has so often been described that I need not again repeat the directions.

Where large orchard areas are under treatment the work of preparing Bordeaux mixture may be greatly lessened by making at the beginning of the season stock solutions of copper sulphate and lime, which may be diluted as needed. Dissolve 100 pounds of copper sulphate in 50 gallons of water; when dissolved 2 gallons will contain 4 pounds of the salt. In another barrel slake 100 pounds of lime and make up to a milk by adding 50 gallons of water. Two gallons when well stirred should contain 4 pounds of lime. When it is desired to make a barrel of Bordeaux mixture, take 2 gallons of stock solution of copper sulphate and add the same quantity of the milk of lime, which should neutralize it completely if the lime is of good quality. If the lime is air slaked or impure the right quantity can be ascertained by applying the ferrocyanide of potassium test. If the lime is deficient a drop of the ferrocyanide of potassium (yellow prussiate of potash) added to the mixture will turn brown; add lime water till the drop of ferrocyanide of potassium remains colorless.

AVERAGED RESULTS

Gained in Spraying Four Leading Varieties.

Variety.	How Treated.	PERCENTAGE SCALE. Grades of Fruit.									
		10	20	30	40	50	60	70	80	90	100
A. G. Russet..	Sprayed.....	First Quality.				Second Quality.			Third Quality.		
A. G. Russet..	Unsprayed ..	1st. Quality.			Second Quality.				Third Quality.		
Baldwin	Sprayed	First Quality.							2nd Qual.		3rd Qual.
Baldwin	Unsprayed ..	First Quality.			Second Quality.						
Greening.....	Sprayed.....	Second Quality.					Second Quality.				3rd Qual.
Greening	Unsprayed ..	1st Qual.	Second Quality.				Third Quality.				
N. Spy	Sprayed.....	First Quality.					Second Quality.				3rd Qual.
N. Spy	Unsprayed ..	1st Quality.	Second Quality.				Third Quality.				
Average of above.	Sprayed	First Quality.					Second Quality.				3rd Qual.
	Unsprayed ..	1st Quality.			Second Quality.				Third Quality.		

Average Results from all Varieties.

	10	20	30	40	50	60	70	80	90	100
Percentage Scale										
Sprayed	First Quality.				Second Quality.				3rd Quality.	
Unsprayed	First Quality.			Second Quality.				Third Quality.		

SPRAYING CALENDAR.

Plant.	1st Application.	2nd Application.	3rd Applicatian.	4th Application.	5th Application.	6th Application.
Apple. Apple spot fungus, codling moth, bud moth.	*Copper Sulphate.* Before buds start.	*Bordeaux.* Just before blossoms open.	*Bordeaux.* *Paris Green.*—Soon after blossoms fall.	*Bordeaux.* *Paris Green.*—10 - 15 days later.	*Bordeaux.* 10-15 days later if spot disease is severe.	
Cherry. Rot, leaf diseases and injurious insects.	*Bordeaux.* Before flower buds open. *Kerosene Emulsion* for aphis.	*Bordeaux.* *Paris Green.*—When fruit has set.	*Bordeaux.* *Paris Green.*—10 - 15 days later.	*Ammonicaal Copper Carbonate.* 10-15 days later.		
Grape. Mildew, rot, leaf eating insects.	*Copper Sulphate.* Before buds burst.	*Bordeaux.* *Paris Green.*—When first leaves are half grown.	*Bordeaux.* When fruit has set.	*Bordeaux.* 10-15 days later.	*Bordeaux.* 10-15 days later. If disease persists.	*Ammoniacal Copper Carbonate.* If disease persists.
Peach—Apricot. Rot, leaf curl, curculio.	*Copper Sulphate.* Before buds start.	*Bordeaux.* 3 lbs. copper sulphate. 3 lbs. lime. 50 gals. water. Just before blossoms open.	*Bordeaux.* *Paris Green.*—Soon after fruit has set.	*Bordeaux.* *Paris Green.*—8-12 days later.	*Bordeaux.* *Paris Green.*—8 - 12 days later if rot is prevalent.	*Copper Carbonate.* 10-15 days later if rot is prevalent.
Pear. Scab, leaf blight, codling moth.	*Copper Sulphate.* Before buds open.	*Bordeaux.* Just before blossoms open.	*Bordeaux.* *Paris Green.*—Soon after blossoms fall.	*Bordeaux.* *Paris Green.*—10 - 12 days later.	*Bordeaux.* 10-15 days later.	
Plum. Rot, shot hole fungus, curculio.	*Copper Sulphate.* Before buds open.	*Bordeaux* *Paris Green.*—Soon after blossoms have fallen.	*Bordeaux.* *Paris Green.*—10 - 12 days later.	*Bordeaux.* 10-15 days later.	*Copper Carbonate.* 10-15 days later if rot is prevalent.	*Copper Carbonate.* 10-20 days later if rot is prevalent.

Prof. CRAIG exhibited photographs of trees before and after spraying.

Mr. MCNEILL (Windsor): I had some difficulty in spraying. One of the difficulties was the straining. I used all sorts of material and spoiled any number of old suits of clothes preparing that stuff, and I would like you to recommend something to strain it through. Sacking and gunning cloth are no use whatever.

Prof. CRAIG: I do not think it is necessary to strain in every case. If you mix up the stock solution and then add your 50 gallons of water to the lime, you can get sufficient milk of lime from the top to neutralize the copper sulphate without any danger of clogging the nozzle.

Mr. MCNEILL. In testing with the ferrocyanide you will find it very difficult to determine when there is a brown discoloration and when there is not. I suggest that you use a chemist's test tube, or a small bottle, and drop it in as you would in a chemical experiment and watch it between you and the light. I had unskilled labor with me, and I know the difficulties that arise on these little points.

D. W. BEADLE: Can't we get along without this little puttering business with the ferrocyanide? Farmers don't like to be bothered with little details like that. Can't we put enough lime in to make sure that we have done the work without any of this bother with the ferrocyanide?

Prof. CRAIG: I suppose in nine cases out of ten you can, but I think it is less bother with the ferrocyanide than without it.

D. W. BEADLE: Perhaps it is to you, but I know how the farmers grumble about doing all these little puttering things.

Prof. CRAIG: The whole operation of spraying is a puttering thing; I admit that. (Laughter.)

D. W. BEADLE: I think it would be possible to give them enough lime in a formula to make sure that you have destroyed all the injurious effect to the foliage from the blue-stone.

Prof. CRAIG: If they use four pounds of copper sulphate and four of lime, there is plenty of lime and more than sufficient; but the idea of using this test is to use just enough so that there will be no danger of clogging the nozzle by having an excess of lime.

Mr. MORRIS (Fonthill): Don't you consider the impoverished state of the soil in which we generally find orchards, and the neglected condition of the trees helps to bring on and spread this fungus? I have noticed this past season particularly a light soil where the fungus ran over an orchard and scarcely left any fruit and the leaves fell off at the same time. On one orchard in strong heavy soil, about two miles from where I lived, where it was loaded with fruit, most of the leading varieties, the leaves were healthy and the fruit was clean and good, and the trees were just fairly bending down; and yet within two miles—in fact almost on the next farm—where the farms had been neglected, the leaves would be off.

Prof. CRAIG: There is no doubt that, upon general principles, the statement Mr. Morris has made will hold good, that, as pointed out by Prof. Panton last night, any plant or any animal if it is in a debilitated condition may be more readily attacked by disease than one that is healthy. At the same time we have many conflicting results. One of the orchards in which these experiments were carried on was a model orchard—you would not be able to find a handful of weed in the whole thing, it was well cultivated and well manured, and still the trees were badly affected by scab every year. They are making satisfactory growth and doing well every way except that they are subject to this disease. I do not think we can expect to correct all the evils by good cultivation, though of course as an aid it is very important.

Mr. MORTON (Wingham): The difficulty I find in making a solution is to dissolve the copper sulphate. You have got to start a considerable time ahead else you will lose a lot of time.

Rot, shot hole fungus, curculio. | Before buds open. | *Paris Green.*—Soon after blossoms have fallen. | *Paris Green.*—10-12 days later. | 10-15 days later. | 10-15 days later if rot is prevalent. | 10-20 days later if rot is prevalent.

A DELEGATE: Take hot water.

Mr. MORTON: I used hot water. I was four hours dissolving twenty pounds, and I did enough grinding to grind up four or five bushels of wheat. The way I found to success was to take it in plenty of time, and all I had to do was to enclose it in a piece of cheese-cloth and suspend it in the top of the barrel, and allow it to remain there. It dissolved there in time and I had no bother. With regard to the lime I have settled down to a formula of four pounds of copper sulphate and six of lime. I mix with the lime and pass as much as will go through ordinary cheese-cloth. It leaves considerable lime behind. Lime is not very expensive, and I don't think any evil results from the excess of lime. When you consider that the excess of lime is simply fused through the large quantity of water there is no injury will result from that. I throw away the residue of lime, and fill up with equal quantities of water and mix them as I use them. I generally spray thirty gallons of water to four pounds of copper sulphate and six of lime; but when I find others have no evil results with fifty gallons of water I find it is a waste of energy and money. I have dabbled in chemistry somewhat, and have tried the ferrocyanide test, and I consider it too much bother.

Mr. W. S. TURNER (Cornwall): Is the fungi of the apple entirely dormant during the winter?

Prof. CRAIG: It requires a certain amount of heat, and the requisite amount of moisture; but I do not think there is any action at all on trees outside, though you have all noticed that the scab itself will grow in the temperature of your cellars on your apples. You can take a barrel of Fameuse in the autumn that have very small spots, and when you open them up at Christmas you find that fungus has grown and gathered a very much larger area than at first. That is a matter of temperature.

Mr. TURNER: There would be no object in spraying now with a strong solution of sulphate of copper?

Prof. CRAIG: No harm would accrue from it, and probably some good, but we have data to show that it would pay for the cost of the work.

Mr. CASTON (Craighurst): Have you verified that statement about the fungi spreading on the apples in the barrels?

Prof. CRAIG: Yes; I don't mean spreading from one apple to another, but it is a very common laboratory experiment.

A DELEGATE: Was there any more than the one spraying on those two trees of Northern Spys, shown in the photographs?

Prof. CRAIG: Yes, those were sprayed five times.

DELEGATE: I had an observation of two trees that seemed to be equally blossomed until the fruit was set, and I took two and a half bushels off one tree and one-half off the other. There was no spraying.

Prof. CRAIG: One of them may have been attacked worse by the scab than the other.

DELEGATE: There was very little scab on any of them.

Prof. CRAIG: The fact of the leaves dropping showed the fungus was there. That is why they dropped.

DELEGATE: There was none on the apples that came to maturity.

Mr. LEHMANN: Is it allowable to use lime for Bordeaux mixture that has been slacked for some time.

Prof. CRAIG: Air-slacked lime should not be used.

Mr. LEHMANN: If it is slacked with water and run into a bed?

Prof. CRAIG: I don't know how long it would keep in that condition. As long as it is covered with water and the air is kept away there would be no change take place. That is one of the points connected with making the stock solution. You can keep your lime in the bottom of the barrel all summer covered with water, and use it as you require.

Mr. CASTON: It is supposed to be stronger.

Prof. CRAIG: The grey clay lime is more satisfactory. It does not slack so well; it does not make such a good base as the white lime; it goes into granules.

Dr. BEADLE: The Bordeaux mixture will deteriorate if kept any length of time, and it is desirable to use it as fresh as possible. After a few days it loses a good deal of its value.

Prof. CRAIG: Yes, that is the very reason the stock solutions are made. If they are mixed together chemical action takes place which will destroy the fungicidal effects, and so they must be kept separate.

Mr. SPILLET (Nantye): I have found no difficulty in dissolving bluestone if the water is kept perfectly hot. Get a cauldron or sugar kettle and empty the quantity in that, and put enough fire under it to keep it perfectly hot, and in a few moments it will perfectly dissolve. As to lime, in a country with field stone there is a great deal of sand, and to overcome this condition I mix a quantity of it in a barrel, and stir it up and allow it to settle for a moment and then pour the milk off; throw in some more water and in that way I am of opinion from experiment that you can paint or whitewash foliage with lime, and it would not at all be injurious to a plant. I have actually whitewashed foliage with milk of lime to see whether it would have any deleterious effect, and there was no bad effect visible.

Mr. CRANSTON: Would Bordeaux mixture spread on trees hurt calves or hogs running in orchards afterwards?

Prof. CRAIG: I do not think there is a possibility of poisoning stock from the effects of the spray falling on the fruit. The copper is not an active poison. It has a certain effect on the intestines—a sort of astringent effect—but is not an active poison such as Paris green or any arsenical compound. The actual experiment has been tried of spraying trees heavily with Paris green, and feeding hay which was grown under the tree to a certain animal without any injurious results whatever. I do not think on the average there is any danger need to be feared from that cause.

Mr. MORTON: I think it would not be proper to attempt to dissolve copper sulphate in an iron vessel. It would decompose a portion of the copper sulphate, and also mix up sulphate of iron with it and get an impure mixture.

The SECRETARY: I have done it and used up a good many iron kettles. It goes through them very quickly, but it certainly is a very quick way to dissolve it if you boil copper sulphate in a cauldron.

Mr. SPILLET: You can get large kettles lined with cement.

The SECRETARY: I think the quickest way is to have a stock solution of the lime—a barrel of lime water—then you can dip out into the sulphate solution until you get the ferrocyanide test, and very soon know whether you have dipped in enough. I think it is the quickest way to use the ferrocyanide, because you don't have to measure lime.

Prof. CRAIG: There is just one point more. Mr. A. H. Pettit expressed doubt as to the efficacy of Paris green when applied with the Bordeaux mixture. He thought its poisonous effects would be weakened. I carried on some experiments this year to test that. A row of crab-trees, fruiting heavily, were selected. One tree was sprayed heavily with Bordeaux mixture and Paris green in it; the other was sprayed with Bordeaux mixture alone. The fruit was picked and the number of wormy apples counted at the close of the season, and out of twenty trees tried and experimented upon, the averages made up between the lot showed that there was only two-tenths of one per cent. difference in the results from one series to the other. So that we can say there was actually no difference, and the Paris green is just as effective when applied with Bordeaux mixture as when used alone.

Mr. FISHER: Have you found that Paris green assisted the Bordeaux mixture?

Prof. CRAIG: I gave it a trial for two years, but I have had no good results from using Paris green as a fungicide. and I cannot say that it assists the Bordeaux mixture. It may be an aid.

The PRESIDENT: I think this subject has been pretty well discussed—thoroughly exhausted I might say—and as the time is passing rapidly we had better take up other addresses.

ROADS AND ROAD-MAKING.

The President introduced Mr. ANDREW PATTULLO, President of the "Ontario Good Roads Association"

Mr. ANDREW PATTULLO, after expressing pleasure at being able to attend this meeting of fruit growers, whose proceedings he had watched with great interest, said:—I know how deeply and closely related to the prosperity of the country the work of this association is. If it is true that he is a benefactor who will make two blades of grass grow where one fomerly grew, the fruit growers of this country must be benefactors indeed, because you are successfully endeavoring to increase to an enormous extent the productive resources of this country. Outside of your association, the people of Ontario especially, and the people of all Canada are beginning to realize what you have realized for some time past, what great possibilities there are in this country for fruit growing, and how much the annual productive wealth of the country can be increased by intelligent and united effort in the direction of improvement. Some may be disposed to ask what relation good roads have to fruit growing? Well, it does not become me to dwell upon that. I think your president answered that question himself when he asked me to come here and say a few words upon a subject to which I have given some attention of recent years; but I think it is obvious to you all that good roads have a very direct reference and relation to fruit growing as well as to every other agricultural production of this country. You know that to fruit growers it is important not only to have good markets, but good facilities for reaching those markets. For instance, over a good road ten miles is not very far to any market; over a poor road five miles might be a very great distance. Consequently, I think it is self-evident that the better the roads of this country, the better it will be for the fruit growers as well as those who produce grain and cheese and all other agricultural products. And especially at certain times of the year with perishable fruit, you know the importance of being able to reach markets that are at some distance from you; so that I am not surprised that the fruit growers as well as those engaged in other branches of agriculture are beginning to feel an interest in this great question of the importance of the rural highways of the country. It has been said that men are very much like animals or insects. We get accustomed to our surroundings, and we begin after a while to realize or to imagine that our surroundings are always right. There is a hackneyed phrase which has been very much abused—a poetic expression which says that "Whatever is, is right." Well you know to what extent that phrase is misapplied, but I use it to illustrate the feelings of many people in this country that the roads which we have had and which we have grown accustomed to are the only roads which we might have had. Well, many of you here have had opportunities of using the roads of other countries, and you know what a contrast there is between them and the roads to which we are accustomed in this fair Canada of ours. In England and Scotland, many of you know from personal observation, the roads are wonderfully good, and are kept up at not a very great deal of expense. In France, where the people are immeasurably poorer than the people of this country, the peasantry are willing to be taxed to the extent of something like twenty millions of dollars every year to keep up their rural highways; and it is rather surprising that in a community such as we have in Ontario, where people in the aggregate and individually will compare in wealth and intelligence with those old countries, we have not as good roads as they have over there. We have made so great progress in many directions, we have spent so much upon our railways and upon our homes and in a vast number of other directions, that it seems to me we have entirely forgotten the relation to public highways to the general prosperity of the country. It is sometimes said that the climate of this country is against having good roads—that it is not possible for us to have as good roads as they have in Europe. Well, perhaps it is not; there is something in that contention; but my own observation in Scotland, where I spent a summer some years ago, and in England in this; that taking all in all, so far as roads are related to the climate, I think we can have just about as good roads here as they have over there. Of course we have to contend against the frost here, but they have to contend against almost constant wet weather.

Many of you have heard the old saw about the little Scotch boy who was asked if it always rained there, and he said, "Naw, it sometimes snaws;" and the fact is that in that country it is usually very wet; and the attrition on the roads resulting from the climate there is fully equal to the injury that is done in this country from frost and the effect of our climate. During part of the year in this country we have the roads sealed up by the snow and the frost, and during that portion of the year our roads are not suffering to the extent that the roads in England and Scotland do through the wet weather or the winter season there. Now, gentlemen, I need not dwell upon what is our system of road-making in this country. You all understand that it is what we call the statute labor system. Now, I am not going to attack the statute labor system here in order to ask you to change it; that is not my object nor the object of the association with which I am connected—certainly it is not the direct object of the association. What we want in this country is an improvement in the roads. We want an improvement in the streets of the town—in the methods of keeping the streets in the various towns and villages and cities of the country; we want an improvement in the rural highways, and we ask all people to consider intelligently among themselves what is the best system under which this improvement can take place. If you can make this improvement under the statute labor system well and good. If we can devise a better system then I think it would be in the interests of the country, and an evidence of wisdom on the part of the population to adopt that sysem. I think most of you will agree that there are some obvious defects in the statute labor system, which might be remedied even if it were not entirely changed. My own opinion is that it was suited to conditions in the early part of the history of this country much better than it is suited to the conditions now. Then it was necessary for our fathers to do the road-making and road-repairing by the statute labor system, because they didn't have money at that time as they have now. Of course some farmers say they have not got very much more money now than they used to have—some of them say they have not as much—(Laughter). I will not discuss that, but many of you know that there was much less money current in the early days of the country among the people than there is at the present time; consequently the system grew out of the conditions of the people at that time—that people should make the roads themselves in a way that I think is no longer necessary, especially in the older and more settled parts of the country. Now, the first objecton to the statute labor system is that all the work of road-making is done practically in about one week of the year. Now, what does that mean? To use an illustration, which I have used before, it simply means this:—If something goes wrong with your house, if a door is broken in, you repair it at once; if something goes wrong with your wagon, you don't think for a moment of waiting three or four months in order to have it repaired; and so it is in reference to everything that you use, if an accident happens or repairs are needed, you see that those repairs are made at once; but you know that the roads become bad in the spring of the year—that is when the defects in the road develop. Now, what do you do? You don't go and repair them at the time or in the early months of summer when grading is most easily done, and when it is most desirable for a variety of reasons that those repairs should be made promptly; you wait until about the end of June or the first of July, after you have used those roads in their injured condition, and you repair them then—at least you do what is called repairing the roads. Some repairing is really worse than no repairing at all. (Hear, hear, and applause.) Then having done that, what do you do? You leave them for the rest of the year, and that is the end of it. Now, if the statute labor system is sound, you ought to add one rule in carrying it out, and that is that the work of repairing and improving shall go on during the most of the year; that is, that the repairs shall be made when they are needed, and when other repairs are needed that they shall be made, and the work of maintenance and improvement shall go on continually during the year. In the old country they never dream of allowing ruts or holes to remain in the road for half a year. They have a class of men there who are kept along the roadways, and you don't see a hole there that you can put your hand in until it is repaired with broken stones, and the result is that the great leading roads through England, and Scotland and France are as smooth as a billiard table during every season of the year. Now, that is

an ideal system of road making. There is another defect in the statute labor system, and it is this, that proper materials are not used. I don't need to describe to you the system of gravelling that has prevailed in this country. I can speak on this point as a practical man. As a boy brought up on a farm, I was able to do a legal day's road work when I was twelve or fourteen years old by driving a team; and I remember that the size of our loads of gravel at that time were just about in inverse proportion to the yarns which the boys used to tell in the gravel pit. (Laughter.) We were not so much concerned about getting good gravel or such large loads of gravel, as we were in putting in the time and enjoying life while the season of road-making lasted. Of course you no doubt have improved upon those times lately. (Hear, hear, and laughter.) I will say this for the path-masters, that while a great many path-masters do their work very badly indeed, because they have never given any study to the question of road-making, and while I find very serious faults not only with the system but with the result, I must give credit to a great many path-masters of the country for showing a great deal of intelligence and public spirit in the way in which they make their roads; I am glad to say that some of them more than do their duty under the system under which they do their work. (Hear, hear.) I have known many of them spend time, which really they were not entitled to apend legally, in improving the work on their road; and I am glad to say that each year is showing an improvement in the work of the path-masters and in their intelligence as a class. This leads me to say that sometimes I think the right sort of men are not chosen for road-makers by the municipal council. I don't suppose it would occur up here; but I have found that down with us in the county of Oxford, sometimes the selection of path-master was made by the members of the municipal council with a little more eye to muncipal politics than to their special knowledge of the science or art of road-making. (Applause and laughter.) Of course I say that would not occur in this district,—(laughter and a voice: "Oh, no, or any other,—but it is a defect of the system which I have seen exemplified in some parts of the country. Now, my idea is, that a man who is selected to oversee the making of roads under the statute labor system or any other system, ought to know how to make roads. You don't hire a man to build a house unless he is a carpenter. You don't engage a man to make the plans of a house unless he is an architect. You don't engage a man to make cheese unless he is a trained cheese-maker. But you very often select men to make roads who know absolutely nothing whatever about the principles upon which the roads should be made; and I have seen it over and over in various parts of the country, that an intelligent path-master who had done his duty and more than his duty, who had made a good bit of road over which he had had supervision, that he would be changed through municipal influences and succeeded by somebody who knows nothing whatever about good work. And what will this man who succeeds the intelligent overseer do? He will simply go to work and do some summer-fallowing or something pretty much like it on a good bit of road. (Laughter.) We want to change all this; we want to have certain principles laid down under which the roads of the country shall be made, whether they are made under the statute labor system or any other system. One of the first requisites of good road-making under any system is drainage, which is almost entirely neglected in making our roads. In the first place the grades are not properly made, the ditches are not deep enough, and there is no provision made for drainage under the roads in places where it is particularly wet. In many parts of the country where the land is rolling, perhaps drainage is not particularly necessary; it is not so necessary as it is elsewhere. But in many parts of the country drainage is the very first essential. So much is it necessary that it does not make a particle of difference what metal you put upon the roads—whether you macadamize them or gravel them—it would not make any difference; if the bottom is not right, you know that the gravel and metal will sink in the spring and disappear, and the road will become bad no matter what you do; but if you make provision for drainage in such cases the difficulties are overcome. Then there is another defect, and that is in reference to the use of gravel. I don't know how you do it here but down with us whether the gravelling is done by the farmers themselves as part of their statute labor, or whether it is let by contract, the gravel is put on unscreened and it is dumped on to the road, very often it is not even spread. (A voice: "That

is the way it is here.") Just think of it! Do you call that road-making? It is dumped down here, and it is not even spread. Now, who are the road makers under such a system as that? Why, the poor unfortunate horses who pass over the roads under such a system as that, the owners of the horses, the feet of which are ruined by tramping over these roads, and the owners of the vehicles which are standing in scores and hundreds in the back-yards and blacksmith shops all over the country. You are the ones who pay for that system of gravelling, the description of which you know to be perfectly true. Now, every intelligent man knows that when you want to gravel a road properly you should use gravel which has not too much dirt in it to begin with; in the second place you should use gravel which has no large stones in it. (Hear, hear.) No stone should be put upon a road in the form of gravel that would not go through a two inch ring. (Hear, hear.) That is a principle which road-makers have laid down; and the folly of putting gravel on in the ordinary way and calling it road-making is shown more clearly when you consider for a single moment the value of those stones which you expect the poor horses and the vehicles to beat into the ground in time. Why, I have seen men actually paid in the county of Oxford for gravelling roads, and they would not hesitate to put on load after load of material most of which consisted of round stones as big as goose eggs or larger. I have seen it actually there as if the stones looked like so many loads of turnips. Think of that being called gravel? The men who do that sort of thing should not be paid by the public for road making; they simply should be arrested and fined for road obstruction—(Hear, hear, and applause)—for obstructing the highways of the country. Now, gentlemen, how are you to put that on? Simply use the material in another way. After a while you will use it in another way; you will use it in broken form; you will have all those stones broken by stone-crushing machinery, and you will get good roads very easily. And that just leads me to say here that sometimes the farmers are rather afraid of this question of road-making, because they say it is going to lead to enormous cost. Now, coming to the question of expense with farmers, and to the imposition of taxes upon farmers, I may say that it is a rather delicate subject. It reminds me of the story that is told of the darkey preacher who proposed to speak on the text, "Thou shalt not steal," who was told, "Brudder, don't you do it; if you preach upon that air text here, you will throw a coldness over this whole meeting." (Laughter.) But if time allowed I could show that the improvement of our highways in this country will not only not impose any additional burdens upon the people of the country, but it will relieve them of a great many burdens that they now bear. It is not a question of taxing you more for good roads; it is a question of relieving you of the tremendous indirect taxes which you are now paying in loss for a system of bad roads. That is the object of road reformers and of the association which I have the pleasure to represent here. Now, just take this question of broken metal. In Oxford county we have around the gravel pits and on the farms in most parts of the country, almost sufficient stone to macadamize the roads of the whole district, but we cannot utilize it. Now, what would be the result if we undertook to utilize it? First of all if we had proper machines by which all the roads would be properly graded, then they would be properly drained we suppose, then supposing we had machines to crush all these stones, and then we had rollers to roll it and put the material on firmly and compactly, what would be the result? Why, sir, it would be an enormous source of revenue to the farmers who have these stones lying waste. It would pay the farmers to draw these stones to the road sides, even if they only get the cost of hauling. It would be so much money in their pocket; and I believe in a few years when we get proper road machinery at work and proper ideas disseminated among the people on this question, you will find the farmers of this province in many parts draw very considerable revenues from selling the useless stones which they have upon the farms for the pupose of improving the roads, and thus increase the value of their property. Now, I am sometimes asked by what system we could carry out the improvement of the roads? Would I urge the people to have macadamized roads in all parts of the country? Well, no, I would not, because macadamized roads are not necessary. I should like to see the leading roads of the country in many parts macadamized. For instance, in many parts of the county of Essex where they have low clay land, it is absolutely necessary to macadamize the

roads; but in a district where there is good gravel it is not necessary to go to the expense of macadamizing the roads. I believe that the future system will be something like this, by which we will obtain better roads than we have had in the past. I think you will see the county councils, for instance, carry out the same principle in reference to roads which they do now in reference to bridges. You know that under the municipal system certain bridges belong to the county and some to the township; and I believe if the counties would take the leading roads running through all the municipalities and that those should be under the control and direction and supervision of the county, and that the other roads in the various townships should be under the control of the councils of the various townships, a radical change and a vast improvement would be made in our system of roads—an improvement almost as great as we have seen in the countries of the old world. Now, gentlemen, the loss from bad roads is not all financial, nor is the gain from good ones all financial. I believe good roads have a very important influence on the public outside of the matter of gain or loss. They have a very great social effect. You know that the farmers are really the most isolated class of the community in this and in most other countries, and I know the condition of the farmers in such counties as I have described—in the county of Essex for instance—is almost pitiable through the fact that they are practically tied up on their farms during several months of the year. The letters which members of the association get from there describe the most extraordinary state of things during the wet season, for instance. Now, what is the result? Good roads would not only relieve these men financially, and in reference to the carrying of their products to market, but it will enable them to associate with one another, to move about, and in that way promote social intercourse, and have a more marked effect upon the social and the educational and the religious habits and life of the people; so that from every standpoint roadmaking is of infinite, direct and indirect importance to the whole people of the country. Now, with reference to this particular association let me say one word in reference to the roadsides. It has always been a matter of surprise to me that there was not a love of the beautiful to this extent—that the roadsides of the country should be improved a little as well as the roadbeds of the country. (Hear, hear.) Now, those of you who have come from the old country know that a great deal of the beauty of the landscape is due to the fact that not only are the road-beds smooth, but the roadsides are just as smooth as a lawn—they are simply long winding bits of lawn going through the country between pretty hedgerows. Now, in this country if we engage a man to do some ditching along the roadside, we allow him to throw up the dirt and the stones in great heaps and leave them there. It would be just as easy, and it would be vastly more attractive, if he would smooth those down in such a way that the grass would grow over them, and that the road-sides would look neat and beautiful. (Hear, hear.) Some people may say that is not an important matter. I say it is a matter of infinite importance. I ask any of you grey-haired people who have come from Scotland, or England or Ireland, what are the pleasantest recollections you have about the country? Is it not the pretty hedgerows? Is it not the pretty winding roads with their level lawn-like sides that linger in your memory? Who, when looking back on their childhood and the distant home, ever get up their enthusiasm—any glow of home feeling—over the snake fences such as you see in Canada, and the rough and uneven road-sides covered with weeds? (Laughter.) Do you think that that sort of thing ever promoted love of home in any people on earth? And I will tell you seriously that there is no more important aspect to this question than the development of home feeling and love of country in this Canada of ours. (Hear, hear, and applause.) As a young Canadian, while I have had the good luck to see a good of other countries of the world, the effect of it has always been to increase my love of home and of this Canada of ours, (hear, hear); but two things have grieved me: the constant tendency of our boys and girls to go into towns -- (hear, hear) — and the tendency of our boys and girls to go to the United States. (Hear, hear.) Now, I maintain that anything that will beautify the rural districts of this country and increase the intercourse of our people, that will make it easier for the young people to go to the school and the older people to go to church, that will enable the young men to drive long distances and take their girls out over these roads—anything that will increase the

pleasure and the taste of young people in this country increases a love of home, and develops the spirit of patriotism in this country. (Applause.) I believe that the tide has turned in reference to these matters; that after a while the young people will be more anxious to stay upon the farm, and that we will keep them upon the farm more than we have in the past. So I say it is of infinite importance that we do all that we can, not only to promote the material prosperity of the people by enabling them to sell their products in the nearest market, and at the least loss in transportation, in order to cut down their expenses in moving their goods; that it is of infinite importance to create in their minds love of home and all there is on the farm and in the rural districts. In conclusion, let me say that we have formed an association for the promotion of road improvement in this country, and I would like if this Fruit Growers' Association would show their fraternal interest in us and their interest in this subject as one relating to your own welfare by appointing delegates who will meet with us at the convention in February next. I believe that we, like you, are engaged in a very important work. We don't want to create revolution in the country; we are not ambitious to change systems in a day; our desire is simply this, to make the farmers of the country realize that this is their question, that it is affecting their interests, and that it is one that they can solve, and the solution of which will do them a vast amount of good, and I am glad to say that we have got the Department of Agriculture to recognize our work as it is recognizing your splendid work. They have recognized our work by putting on their list of speakers our question in the farmers' institutes all over the country. The directorate of our association is mostly composed of practical farmers, and among the speakers we have chosen on this question most of them are plain, practical farmers with clear heads and plain speech who realize that this is their question, just as the farmers of the United States know that it is their question; and I believe that what they are doing will have a most important influence in this country in a few years. I am delighted to have been with you, and I hope that the few rambling observations I have made will increase your interest in this question, which I am sure very closely and very fully affects the interests of all of you. (Applause.)

The PRESIDENT: We shall give an opportunity for any questions to be asked, though I do not see that there is room left for further questioning or discussion on this matter. Mr. Pattullo has pretty thoroughly covered the ground.

Mr. BOULTER: I would like to ask if the present system is done away, what line they propose to adopt—whether by direct taxation, putting a force on the road and keeping it in order, or taking the present system of statute labor and employing people by it?

Mr. PATTULLO: The Association was only formed this year in February, and that is a matter that we have not yet entirely thrashed out, and the members of the Association feel that it is much better to discuss this matter in a general way with the people before we commit ourselves to details or plans. This is a democratic country, and the laws which may be passed in reference to road-making are simply those that will come from the people, and I may say from the farmers of the country, who are chiefly interested in the matter. The Association has carefully refrained, and as president I have strongly advised, that at this stage we shall not commit ourselves to details of legislation, which should be the result of a great deal of wisdom and discussion in the future.

Mr. CASTON: I think this question of road-making is one of the most vital importance to us all as fruit growers, because we want the very best roads for the handling of our fruit and the hauling it to our railroad stations. Two or three points in Mr. Pattullo's address should be taken to heart by everyone of us; first, in regard to drainage; second, in regard to ditching. They make usually a square ditch, and it almost invariably caves in. Then in regard to the common stones of our road. If I was a manufacturer of vehicles or a horse-shoer, I would advocate the present system; but not being so let us do away with it. It is a most destructive thing, and people little calculate the amount of damage it is doing to vehicles or horses' feet. If you are on the road and notice fifty or a hundred horses going by, you will be surprised to notice how many of them are lame, owing largely to this cause. I feel like moving a vote of thanks to the

gentleman who has come all the way from Woodstock here, and I hope that the committee of resolutions will take a note of it. (Hear, hear.)

The SECRETARY: I think the least we can do as fruit growers to show our interest in this matter—because I am sure we are as interested in the roads as anybody, we have more delicate products to carry over the roads than most people—would be to respond to Mr. Pattullo's suggestion that we send a delegate to the next meeting of the Association (hear, hear) who will not only give our view of the matter, but also bring back a report to us, so that we may be still further in sympathy with this work. I am sure this will be taken up by the directors.

The PRESIDENT: That was my idea when I asked Mr. Pattullo to introduce this subject here. I noticed that this question had been brought into the Fruit Growers' Association in the United States. My opinion is that we have as good a country, or a better one, than they have over there, and I believe we are as good a people or better than they are there (hear, hear, and laughter) and I didn't want to be behind them in anything, and when they were taking this advance step, I thought we could keep up with them, even if we didn't get just a little ahead of them. I am pleased to have our friend, Mr. Pattullo, here, and to see that you have taken such an interest in the subject he has introduced. Do you think that matter of sending delegates should be taken up now?

The SECRETARY: I think it should be left for the directors at their meeting to-morrow.

THE PACKING AND SHIPMENT OF FRUIT.

Mr. C. C. JAMES, Deputy Minister of Agriculture, spoke as follows:

In beginning his address Mr. JAMES referred to the chart used by Mr. Craig, on which the artist had in one case printed "unprayed" instead of "unsprayed." He stated that the man who made the chart appeared to believe that after all "praying for fruit" and "spraying for fruit" were one and the same thing. Certainly the results given by Mr. Craig appeared to prove that in the average season spraying was absolutely necessary if good marketable fruit was to be obtained. Mr. JAMES then quoted at length several printed market reports from London and Liverpool in reference to the sales of American, Nova Scotian and Canadian apples (*i.e.* apples from Ontario and Quebec). In one case the apples sold in Liverpool ranged in price from 30 cents to $3.35 per barrel, the difference resulting from variety in quality and method of packing. It costs over $1 to take the apples from the farm to the British dealer. In many cases apples were sold from the farm and shipped abroad that should never have been allowed to leave the farm; in fact they should never have been grown. Sales of American Baldwins were quoted varying from 75 cents to $3.60 per barrel, which showed that the difference in price depended not so much upon the varieties sent as upon the quality of the fruit and its packing. In this connection the speaker submitted to the meeting the consideration of the question: Whether all apples should be packed in classes in standard barrels and marked with the packers' names. The importance of the fruit trade to Ontario was touched upon and the value of spraying as brought out in the previous discussion was emphasized. From many reports the following were taken and advanced as proving that first-class fruit brings good prices in Britain, and that poor fruit does not pay for its transportation.

First is given a table of sales of Canadian apples at Liverpool in the week October 8th to 12th, 1894:

CANADIAN APPLES, LIVERPOOL, OCT. 8-12, 1894.

No.	Price per bbl.	Total.	Remarks.
39	$0 30	$11 70	Very wasty.
1	50	50	Wasty.
24	60	14 40	Slack and wet.
33	75	24 75	Wasty.
20	1 00	20 00	Slack and wet.
29	1 25	36 25	Wet.
9	1 35	12 15	Slack and wet.
39	1 40	54 60	All slightly wet.
21	1 80	37 80	Various kinds slack.
10	2 00	20 00	All tight.
12	2 90	34 80	XXX Hubberts, tight.
28	3 35	93 80	XXX Colverts, tight.
265	$1 36	$360 75	

71 barrels sold for $186 40 ($2.62)
194 " 174 35 (90c.)

The whole shipment averages only $1.36 per barrel.

The next quoted was two weeks later, and the sales were as follows. All these apples were evidently handled at a profit :

CANADIAN APPLES, LIVERPOOL, OCT. 22-26, 1894.

No.	Per bbl.	Total.	Remarks.
15	@ $4 50 =	$ 67 50	Tight, King's Fallwater and Blenheim Pippins.
20	" 3 55 =	71 00	Tight, good varieties, XXX.
25	" 3 15 =	78 75	Tight, Baldwins XXX and Cooper's Market XXX.
7	" 3 00 =	21 00	Samples.
61	" 2 85 =	173 85	47 tight, 2 slack, 12 slightly wet (29 Snows).
8	" 2 25 =	18 00	Wet and slack.
136	" $3 16 =	$430 10	

To show that great variations are found in the same kind or variety of fruit, the following sales of one variety, Baldwin, were made. This was American fruit. Canadian Baldwins usually sell a little higher than American :

AMERICAN APPLES, LIVERPOOL, OCT. 22-26, 1894.

Baldwins.

No.	Per bbl.		Total.	Remarks.
28	@ $3 60	=	$110 80	Fancy, select.
26	" 3 35	=	87 10	Choice, new barrels.
45	" 3 25	=	146 25	Fancy, select.
30	" 3 05	=	91 50	Tight, new barrels.
77	" 2 75	=	211 75	Slack.
10	" 2 35	=	23 50	Slightly wet.
20	" 2 10	=	42 00	Wet.
10	" 1 15	=	11 50	Slack and wet.
4	" 75	=	3 00	Wasty.
250	" $2 91	=	$727 40	

The SECRETARY: I think we ought hardly to pass this subject without appointing a committee to consider it. I think the points mentioned by Mr. James are very important. I think it is possible to answer the three questions put by the Minister of Agriculture, that the barrels should be of regular size; that they should be graded into one, two and three, and that the name of the shipper should be upon the barrels. It works into the question of the apple inspectorship. I believe it is possible to have this whole thing worked to our satisfaction and to the benefit of the country at large, and I would move that Messrs. A. H. Pettit, George Fisher, of Burlington, and A. M. Smith, of St. Catharines—all of whom have been and are more or less interested in apple shipping—should meet before to-morrow, and see if they can put this matter in some shape to bring it before us for our approval.

Mr. CASTON seconded the motion.

Mr. SMITH suggested the name of Mr. Dempsey in his place, and this was accepted by the secretary, as Mr. Dempsey is one of the largest shippers we have.

Mr. PETTIT suggested that Mr. Boulter's name be added as that of an extensive shipper.

The SECRETARY suggested Mr. Fisher, of Orillia, and Mr. Pettit suggested Mr. Caston, of Craighurst. The committee of six were then appointed, with instructions to report to-morrow.

The meeting adjourned at five o'clock.

SECOND DAY—EVENING MEETING.

The music hall was crowded for the evening meeting.

President RACE took the chair and said: Ladies and Gentlemen, it is highly gratifying to the Ontario Fruit Growers' Association to find that their coming here has awakened such an interest in this community, as manifested in this gathering to-night. We have never seen anything like this before, and being all young men, we feel quite nervous and shy in the presence of an audience of this kind. (Laughter). We have looked upon Hamilton for some years as our best point, but Hamilton never touched this—cannot come near it. (Applause). The reception we are having here makes us feel as though we would like to come back again. (Hear, hear, and applause). We have a pretty full programme to-night; I hope you will be pleased with it. If you are as much pleased with the programme as we are with the audience, I know that this will be a mutually satisfactory meeting.

GEORGE THOMSON, Esq., Mayor of Orillia, then gave an address of welcome. He said: It is a pleasure indeed, for me to welcome you to our town. We are exceedingly pleased to see your with us, and as the crowded audience shows, the people of this town are interested in your work. We are pretty well to the north part of Ontario here, but still the display which is exhibited on the table in the outer room, shows you that we are not too far north to grow, or appreciate good fruit. This, I have no doubt, is a surprise to some of you. You mentioned in your opening remarks, sir, that Hamilton, or some other of those small towns (laughter), didn't extend to you such a cordial welcome. I wish to tell you that in this town we don't do things by halves, this being a go-ahead town, and we try to keep up the reputation. I am sure it is a great pleasure to all the citizens of Orillia, to know that you selected this place for your meeting this year, and I hope that your deliberations will prove useful to the Association. Once more I welcome you on behalf of the town of Orillia. (Applause).

President RACE: In speaking for the Fruit Growers' Association of Ontario, we accept, with the very highest appreciation, the welcome which has been extended to us,

not only in the words of your mayor, but in your presence here to-night. He remarked that it was no doubt a surprise to some here to see such a turnout. Now, I can assure you that it was not altogether a surprise to us. We had partly anticipated something of this kind. When you sent a deputation over to Peterborough a year ago to invite us here, we rated up those gentlemen you sent, and made up our minds then that if they were a fair indication of the enthusiasm and the interest of this community in fruit growing, we would meet an enthusiastic and deeply interested people here. Now, we are pleased to know that we didn't rate those men mistakingly. We find them enthusiastic and deeply interested in our work, and we find that they were a fair indication of the people whom they represented when they went to Peterborough, and the promises they made there have been so well filled that we have nothing left to desire. I am sure we have learned since we came here things that have been of profit and pleasure to us. We had no expectation of seeing so many things of interest as you have shown. We didn't expect to see such a fruit exhibit. We didn't come out here to-night in the spirit of conquest or of confiscation, but I can assure you if Moses had been among us, he would have strongly tempted us to come out here and possess this land (applause), because I do not know that Moses even could have been better satisfied with anything than the exhibit of fruit that you have made here to-day, showing the capabilities of this section of the country. We have the grandest country in the world here in Ontario (applause), and I have frequently said we are the best people in the world. (The applause was so loud as to cause a dog in the room to bark). I believe that even a dog can appreciate words of that kind. (Renewed laughter). I can assure you of this, that we are the most deeply religious people in the world, and I find in all sections of the province of Ontario where I have been, that there is not only a religious sentiment prevailing among the people, but that there is love of the beautiful in nature. I have been asked, since coming to the platform, to tell a little experience of mine in one of these northern towns a year or two ago. I was addressing a meeting something similar to this, and I was speaking about beautifying the home surroundings, and I asked why every farm home should not be beautified with all those beautiful things that the Creator has placed within our reach. I was also speaking as to the advantage of having a fruit garden. I said, is it possible that the farmers of this country have neglected a taste of this kind? Is it possible that the farmers have not a taste for a nice strawberry and a nice dish of cream? and I made this challenge: Is there a farmer in all this audience who would turn up his nose at a nice dish of strawberries and cream, provided by his wife and daughters from their own dairy? and I was almost dumbfounded by a farmer to my left, a few seats back, holding up his hand. (Laughter). Now, you can just imagine the position I was in. I didn't expect any such response to my challenge, but I had made the challenge and it was accepted, and there was the hand. What was I to do? My friends that were on the platform with me laughed very heartily at me, and the audience laughed. The more they saw my confusion the more they laughed, but it was only for a moment or two. As soon as I could collect myself, I stepped to the front of the platform and said, As they say at a camp-meeting, "If all the praying brethren will just come to the front, here and gather round the front, we will pray for that man.' (Laughter). That hand was down in a moment. (Great laughter). When you begin to talk about praying for any man, he generally wilts at once. (Laughter). A good Scotch friend on the platform—John MacMillan, of North Bruce—clapped his hands and said, "Capital; man, if it hadn't been for your camp-meeting experience that man had you floored." (Renewed laughter). So you see now, there is something in having a love for the strawberry, a love for home surroundings, and having experience in a Methodist camp-meeting; if it hadn't been for that I would have been in a difficulty there that I could not have got out of. I thank you again for this very kind welcome, and we will remember you kindly as long as we live in this beautiful land.

Mrs. McKINNELL read an excellent paper on "Flowers":

FLOWERS.

Flowers, a writer has quaintly but most aptly designated as "God's smiles," and it requires no very great stretch of imagination to think that after the countless ages of time, during which this world of ours emerged from the chaos and darkness of its early existence and gradually developed into a place of beauty and fertility; when its mountains and valleys, clothed with verdure, and all fruit-bearing trees and vegetables necessary for human existence were made perfect; when the Great Creator of all this beauty and perfection pronounced it "good," then, from deepest valley to mountain top burst forth myriads of nature's most lovely creation, the many-hued flowers, which, not a necessity of existence, God gave to His children as a luxury to gratify the love of the beautiful which He implanted in its fullness in the souls of His first sinless creatures.

Much might be said of the value of many flowers for medicinal and other purposes, but in this paper I wish to speak of the influence of flowers as a whole upon the human family. First among the blessings they have brought to mankind is their refining influence. All the beauty of apparel and surroundings which wealth may enable its possessor to indulge in pales before the pure and perfect loveliness of a mass of flowers. Even Solomon in all his glory was not arrayed in such perfection as the simplest lily of the field.

The refining influence of flowers was well illustrated in the case of the untidy wife of an English cottager. All counsel as to the keeping of her home more tidy had failed. At last someone presented her with a little plant in bloom, a scarlet geranium I think it was; the gift was accepted and placed upon the window-ledge, and as the mistress of the house gazed at her new and pretty possession, the incongruity of its pure beauty beside her exceedingly dirty window struck her, and the casement received a long-needed cleansing. The clean window now only showed up the dirt of the floor and all the surroundings, which were gradually made to match the window and its little floral gem. Now the desolation of the exterior of the cottage began to be felt, and before long the yard was cleaned up and planted with cottage flowers. The home, which had been a disgrace to the village, became a little Eden to cheer its inmates and gladden the eyes of each passer by. The cultivation of flowers by the amateur florist has ever been found to be a most health-giving occupation. Many a weary mother has found health and lengthened life by spending a few spare minutes in cultivating her much-loved flowers in the borders around her doorway in the summer time, and caring for her window plants in the winter. Indeed, mother nature is a grand physician, rewarding the labors of those who love her with renewed vigor. In no other employment can we produce so much beauty with so little labor. The painting, the fancy work, shall I say the crazy quilt, are all beautiful in their places, but represent many hours of time bestowed upon their production, but the lovely floral gem given a little loving skillful care will develop fresh charms every day, and at last burst upon us with a wealth of beauty or a breath of fragrance beyond the power of art to produce.

In speaking of fragrance, most wonderfully has God given this gift, generally not to the flowers most prized for their showy beauty, but to the pale cream, or white blossom, or to the insignificent little bloom which would be passed unnoticed did it not appeal by its fragrance to our sense of smell.

In tropical and semi-tropical countries where the night hours are the most enjoyable to the inhabitants, God has filled the forests and glades with lovely night bloomers as the cereus, the datura, moon flower, nicotiana, and many others, nearly all of which are pale cream or white, lovely as messengers from the spirit world and rich with a perfume peculiar to themselves, bringing to the weary mortal a feeling of delicious rest and drowsiness.

Much has been said and written for and against the keeping of flowers in the living and sleeping apartments of the home. That they are not injurious is now generally allowed, indeed, I think they act as fine tests of the healthfulness of the home. Keep your house too hot or too cold for your plants and your children suffer, while the glorious

sunshine which must be freely admitted to bring your flowers to perfection brings also (other arrangements of the home being equally pure) the roses of health and beauty to the cheeks of your little human blossoms.

How deeply the love of certain flowers sinks into the heart of man and thrills his whole being when brought under his notice, we can guage by remembering the flowers which have been chosen as national emblems, how the Englishman loves the rose, the Scotchman his thistle, the son of Erin the Shamrock, the Frenchman the fleur-de-lis, and the Jap his lovely chrysanthemum, though it may not be his national emblem.

The man or woman who fills the window or the front garden with lovely blossoms is a public benefactor. No one can tell how many thousands of hearts have been cheered and lightened as the eye of the passer-by rested on the bright blossoms and took in the message our Father ever sends through their eloquent silence. I must not forget that beautiful mission, "The Flower Mission," which has sent its loving messages to hospital cot and the couch of all the sick brought under its notice. How much pain has been for a while forgotten as the sufferers drank in the beauty of the little messengers, who would ever remind them that He who clothed them with such beauty was also ever mindful of the sights and tears of His suffering children.

In eastern groves where poetry dwells,
They've given each flower a tongue;
Invested thus, a mystical charm
Round the simplest blossom is flung;
The Indian pink speaks of personal grace,
The mignonette beauty of mind,
The citron depicts a beautiful face
When joined to a nature unkind;
The ivy and wallflower steadfast friends
In adversity's hour prove true;
Beware of the foxglove, he seems a friend,
But in heart he is false to you;
Knight errantry's spirit is imaged forth
By the monk's hood stately and bold,
The gentle mimosa is courteous and kind,
While the lettuce is selfish and cold;
And now, e're I close, a boon let me ask,
Cherish the flowers which have prompted my task.

The PRESIDENT: I don't believe there is a man or woman in this community that needs praying for in the connection in which that gentleman out north that I spoke of needed praying for. With such a true lover of nature among you as the one we have just listened to, I don't think you will ever be charged with neglecting the beauty of nature. That is a delightful paper, and we take pleasure in laying our hands upon it for our report for the coming year.

Miss HODGE then read a paper on "Floriculture as a Business for Women."

FLORICULTURE AS A BUSINESS FOR WOMEN.

This is quite in keeping with her capabilities and tastes. What more congenial occupation for women than caring for the beautiful plants and flowers which the Creator of all has made! Moving this one into the sunshine, picking off dead leaves from another, giving all a motherly care! Peering into the face of this little flower and wondering how such lovely hues can possibly evolve themselves from such a homely little plant! Women seem endowed with a flower-loving nature, and never are quite content but when the proud possessor of the most beautiful plants that can be obtained. In these days of social progress new and broader fields are opening out for the employment of women, and they are not limited to the teaching profession, which has always been crowded—the fine arts, manufacture of artificial flowers, designing and making of bonnets and gowns, or, as

a last resort, the more menial and heavy work. But now, as the years go on we see the women of our country taking up the professions. They are lawyers, doctors, and even candidates for municipal honors, they are installed as clerks in stores, typewriters and bookkeepers, and are now beginning to take a place as professional *florists*. The business of floriculture is not crowded, and there is always room for bright, thorough-going, flower-loving women to make it a success. A natural correct taste is one of the requirements, and in recognizing the beautiful in color and form, and, above all, the harmonious and artistic combinations of these, women excel, and so are unequalled as designers and decorators in this line.

There are some women to-day throughout the country doing a profitable business as florists, being themselves both growers and business managers. Though we often hear arguments to the contrary, we have in the ranks of women a large percentage as agile, clear-headed and determined, and who might just as confidently expect success, as the men who are in business. This being the case, why may they not engage in a business so eminently suited to their refinement, taste and powers as the cultivation and commerce of plants, flowers and seeds?

An absolute necessity to success in the culture and disposal of plants—and without success there cannot even be pleasure—is a complete mastery of details, and this we assert, woman has pre-eminently—as is proven by her able management of the multitudinous duties which crowd each other in the daily routine of household work. Then to study the nature, habit, and all the conditions and requirements of the many genera of the flower world is a delightful exercise of the mind, and women delve into minutiæ of the business with a zest that few men show.

A high standard of excellence is imperatively demanded by women, and where does the critic find a broader field for indulgence of discernment, comparison and taste? To be a florist should not be thought to be one whit less in importance than to be a dry-goods (or any other goods) merchant. The very nature of his calling should make him better, as intimate association with plants and flowers is in itself elevating. Many people associate with "florist" the idea of "gardener," a word which to them has meant a kind of "Jack of all trades," who looked after the cow, drove his master down town and back every day, attended the house furnace and took care of the greenhouse, kitchen and flower gardens in *his spare moments*, and was supposed to have vegetables and flowers ready for all occasions. Occasionally one would see this advertisement in the country papers: "Wanted—a gardener to look after the cow and horses, and make himself generally useful." But these are getting rare—like the Dodo bird, almost extinct.

A woman, to be a successful florist, must be on the alert for all the new and rare things in her line, and make specialties of plants which, after a fair test, she finds to be quick sellers and to give customers the best satisfaction. Again, patrons are of the most refined class of society, hence, in business associations, a florist mingles with people of taste and culture, which is one of the strongest proofs of the occupation being a suitable one for woman. In summing up briefly we find that women who wish to earn a livelihood may be successful florists. 1st. Because the business, from its nature and surroundings, is a suitable and elevating one for them. 2nd. Because they are naturally endowed with a plant-loving faculty, and to be successful one must have a congenial occupation. 3rd. Because they have the command over details necessary to the wants of so many and varied tender charges. 4th. Because when she has ventured into the, for so long to her, foreign realm of mercantile life, she has been found to be the peer of man, who so long has held the territory.

The PRESIDENT then introduced Mr. PATTULLO of Woodstock, to speak on the asthetic side of roadmaking. In doing so he remarked that nature intended us to enjoy all the good and beautiful gifts bestowed upon us. We have been given a beautiful country here; we have denuded it of its forests; and while we have so many trees and plants and shrubs given for our pleasure and profit, it is our duty to make the best possible use of them; and there is nothing that adds so much to the beauty of a country as the planting of trees after the forests have been cleared away, and especially planting trees along the roadside.

TREE PLANTING IN RELATION TO ROAD-MAKING.

Mr. ANDREW PATTULLO of Woodstock, after some introductory remarks as to his address given during the day, said that there is not only a monetary or material aspect, but also a social, even religious and educational aspect, to the question of roadmaking, which is closely related to our national life. The national life and the tastes of a people and the love of home are largely dependent upon the character of our roads. From outward objects our love of home and of country always springs; and in the interests of patriotism as well as of home life, we should do all we can to make our homes and farms and roadways as beautiful as those in any country in the world. I believe that one of the agencies to keep young people upon the farm is to make farm life and all the surroundings of the farm and all the rural parts of the country more attractive; and it is the truest and highest patriotism on the part of those who see these things in this way, to endeavor to bring before the people of this country the enormous importance of the improvement of our rural highways, and the practical bearing of this question upon the material as well as the higher interests of the people. Now, as to the question of tree planting in its relation to roadmaking. The trees in the form of avenues are rather the enemies of good roads than its friends. I don't want you to carry away the impression that I should not like to see you beautify the country by planting trees along the roadsides; quite the reverse, but you should always bear this in mind, that the trees should be planted some distance apart, and not in the form of thick avenues, because if they are planted too thickly, or if they are of that nature that the shade is too dense—maples for instance—unless they are carefully cared for, if planted too closely they make too much shade which produces too much dampness, which is the cause of bad roads. Don't be ambitious to get avenues of trees along each side of the road so much as to get them here and there. If you want to plant avenues, plant them on the north side of the roadway so that the sun will get at the road and the shade will be the other way. That is a most important practical detail that is sometimes forgotten. In England and other countries of Europe, they rather prefer to have their roads on the hillsides or laid out in such a way that they will not be shaded, and consequently the damp will be avoided. If you want to plant wind-breaks in the country, plant them one field back from the road. But it adds enormously to the beauty of the roads and to the picturesque appearance of the country, and to the cultivation of the beautiful in the hearts of the people, that there shall be trees along the road sides as well as in the fields and along the fences throughout your farms; and I think that you ought to be a little more liberal in this way than you have been. In the interests of roads as well as of fruit growing, I would advise you to plant fruit trees along the roads of this country everywhere. (Hear, hear.) Some will say, the boys and tramps will steal all the apples They won't do anything of the kind. They will simply take what they want and leave the rest—and there will be plenty left. You would make a great many happy boys, and a great many happy tramps in this country, and you would do them no harm, but a great deal of good. Perhaps if you fed the tramps with fruit from fruit trees along the roadside, you would have less to do in taking care of them in what we euphemistically call the "coolers" of the towns and cities. So I am very strongly inclined to plant fruit trees along the roadsides as well as the planting of maples and basswoods and cedars and other trees. In California, some years ago, I was greatly struck with the fact that there are no fences there, and yet there are thousands of acres of oranges and all sorts of fruit in that country. There is not a fruit thief in that country, because they don't require to steal—they just take all they want, and they don't take any more than they can use for immediate purposes. They are very much happier without having to break into places as we have to here. (Laughter.) This question is coming to the front as one of practical and national importance; and the Association which I have the honor to represent, has entered upon a most important work in the interests of the people. (Hear, hear.) To my pleasure and surprise we see the farmers taking this question up as their own; and I rejoice in the increasing intelligence and power of the farmers of this country; and when they make up their minds to have good roads in their own interests they are going to have them. I think that in a few years those who are opposed to road improvement will be in a hopeless minority.

THE HIGHER HORTICULTURE.

Mr. C. C. JAMES, Deputy Minister, said: While Mr. Pattullo was speaking in regard to the planting of our roadsides with fruit trees, I remembered that in Spain they have an unwritten law that whenever a fruit is eaten the seed or the stone must always be planted; and we are told that the rustic people of that country are accustomed to push in with their heel the stones of the fruit that they have eaten along the roadside, and as a consequence for miles and miles the roadsides of Spain are lined with fruit trees, which at one season of the year are laden with magnificent blossoms, and at another time with luscious fruit. (Hear, hear.) When I was at the Agricultural College a few years ago, we had there an animal to which we always looked with a little more pride, and in which we had a little more interest than any other animal standing in the two rows of stalls; and why? Because that anima had come from the Queen's herds in England. Now, you no doubt know that the Queen is one of the best farmers in England. You also know perhaps, that the Prince of Wales is a rival to the Queen in farming; and the other day when the Duke of York was married he must needs go and buy a farm also, and set up for himself; and it was only within the last week that we read that the Premier of England, Lord Rosebery, had just sent a fine bunch of fat bullocks, 142 in number to a large butcher firm in the city of Edinburgh. Now, why do I mention that? Simply to show that in England and Scotland, as well as in some other countries of Europe, agriculture is not a profession or calling beneath the dignity of anybody in the realm, that in fact no one considers himself a true gentleman unless he has a large and well-stocked farm to which he can point as being the owner. When we come to this country do we find exactly the same state of affairs or the same opinion? A short time ago we had an election in this province; and before the full force of the farmer's vote was felt, we found here and there that the farmer was held up almost to ridicule; he was dressed up perhaps in a coat that might have served a year or two ago for an old scare-crow on the farm. The hat upon his head was rather rusty. One leg of his trousers was in his top boots and the other was outside, and his whole appearance was one that was not of the most attractive. But the elections went by and the farmer was suddenly found to be a very important man in this country; and now how do we find him pictured? What kind of a man is he now? Well, the best way that I can do is to illustrate it by this noble band of farmers we have upon the platform. (Hear, hear). Ladies and gentlemen, these are some of the farmers of this country now. (Hear, hear and laughter). Perhaps, however, they might object and say: "We are not farmers; we are fruit growers,"—and that illustrates just one little point I want to make—that the fruit growers of this country consider themselves—and I think with no little justice—the aristocracy of the agriculture of this country. There are two reasons for this. In the first place fruit growing has been a very paying industry, with some exceptions, with here and there bad years; but taking the average of the years through, I think that fruit growing has been as profitable as any other line of industry. Those men who have gone into fruit growing in favorable localities, who have gone into lines that were adapted to those localities, and have adapted themselves to their work, have in the majority of cases made a success of their work; and what is the result? After you go through a section of the country that is given over wholly to fruit growing—such a section, for instance, as the Niagara district or the district of Essex or Kent, where we have really no farmers, but altogether fruit growers—what will you find? You will find there that those men are living in rather fine houses—in just as good houses as we find in our towns and cities, and that those houses are as well furnished as any houses in our towns and cities. The surroundings are very pleasant; they have their well-kept, well-trimmed lawns, and even flowers, here and there shrubbery, neat hedge fences, and so on; and you think perhaps you have come upon the country residence of a city millionaire. Not at all; it is the residence of one of those fruit growers who is living there upon his fruit farm. You will find a piano there; you will find a man well-dressed; as I have already illustrated, these men are living examples of that. (Laughter.) You find them hale, hearty men—I don't think you would take any objection to their general appearance or their looks. (Laughter.) They seem to enjoy

life pretty well. (Renewed laughter.) There is nothing like teaching by example. You find even in some places a billiard table here and there for the amusement of the boys. When you go through that whole region, you will find few men who are complaining about hard times. Well, of course they are complaining about the low prices—you can't find a fruit grower or a farmer or a dairyman or a stockman who is ever satisfied with the prices, of course—and perhaps there may be some of the same nature in connection with our manufactures and other kinds of work in towns and cities ; but these men have about them an air of satisfaction and contentment and enjoyment in their work which I don't think you can find equalled in any other part of this country, unless it may be in a few sections where dairying has been for some time carried on upon a scientific basis, and where the results have been of a most generous nature—such a district as that from which Mr. Pattullo comes. These men, I say, then, are the "Upper 400" of agriculculture. (Laughter.) Now, why have they come to this locality ? What interest have you in their work ? The fruit growing of this province is not confined to the Niagara district. I believe you can beat them in the growing of apples in this district, but they can beat you probably in the growing of grapes, and certainly in the growing of peaches. There is a district away to the west from which some other members come, known as the Essex and Kent district, famous for its apples, its grapes, its peaches and other fruits. Then we have the district along the Georgian Bay, not far from here, famous for its plums. We have in the Bay of Quinte district, from which Mr. Boulter comes, a magnificent district for fruit culture. A little east of Toronto we have a district famous for pears and apples. So if you go over the entire length and breadth of this land you will find in this older part of Ontario soil and climate specially adapted to the growing of some kind of fruit to what we might call perfection. Well, they have come here to learn something from you in regard to your fruit growing, and they have come also that you may learn something from them in regard to their methods of fruit growing ; and I simply say this as one who has attended these meetings for a number of years—a sort of unattached member of this association—that if the people of Orillia and the vicinity allow this organization to go away from here without crowding this room from day to day and drinking in all the information that can be got, they will perhaps have cause to regret it all the days of their life. It may be ten, twenty or thirty years before this association will come back again. Now, you may say they cannot do very much. Perhaps they cannot do very much for each individual ; and yet they can. But suppose we look at this question in its broad aspect. In Ontario, we have 175,000 farmers, that is, men who are cultivating farms 75, 100, 125 and 150 acres in extent. Suppose we allow only forty trees per farm, we will have upon those farms 7,000,000 apple trees—I am speaking of apple trees in particular now. Then in addition there are about 110,000 families occupying lots below 10 acres in extent, and I think, taking these and the town and city lots into consideration, we can add on another million, making in all at least 8,000,000—and I am inclined to think that 10,000,000 would be nearer the exact figure. Now, supposing through the work of this association one cent can be added to the value of the product of every tree for a year, we would have added to the value of the apple product of this province from $80,000 to $100,000. "Oh, but," you say, "a cent an apple tree, that is nothing ; why not talk about ten cents ?" Well, then you are in the millions. Is there any man here having apple trees upon his farm or in his garden who has brought those trees to such perfection that he could not by a little more skill and a little more knowledge add ten cents at least to the value of the fruit annually produced upon them ? If the lesson as to the value of spraying as taught by Mr. Craig's chart could be practised upon every farm and garden in this province, it would add not simply ten cents to the value of every tree, but an average of two or three and perhaps four times that amount. Now, this Fruit Growers' Association, with a small grant from the Government —some $1,800 in cash, together with the printing of their report—have banded themselves together that they may bring up the general condition of this fruit growing industry. I have mentioned apples simply as one. We have all the other fruits ; and if here and there by bringing the people together and dropping a little hint here and there, and by starting the people thinking and getting them to read their reports of the opinions they send out, they can get these men to slightly improve on their old methods, you can see

that the very small grant that the Government of the country makes to this Association would be returned not simply ten-fold but a hundred-fold, in fact, in the annual product from the fruits which are produced here year after year. But the audience to night is made up principally of ladies. I presume that most of you have come from Orillia or its immediate vicinity, and you may say, "What has the Fruit Growers' Association to do for us?" The two very admirable, very carefully prepared and very able papers read to-night show that there is at least one line of this work that is of great interest to every woman in this land, namely, the cultivation of flowers. Now, some may say there is no money in flowers unless you raise them to sell. But there is money in having flowers in every home in this country; and, as has been emphasized two or three times to-night, there would be not only money in the farmer's pocket, but there would be increased interest in the farmer's work, and more boys staying on the farm if we could by means of flowers and other things make these places more attractive. Now, could not woman's sphere in town and village and farm life be somewhat enlarged? You go into a farm house to-day, and what is ordinarily the work of the woman of the house? In some places it is the old story, "Man works from sun to sun; woman's work is never done." But there are changes going on. The introduction of the cheese factory and the creamery is taking away from the women of the house a great deal of work that hitherto has been little short of downright drudgery, nothing else in fact; and I think that every effort should be made that possibly can be made to encourage the erection of these factories and creameries all over the country so that the women of the farm may be still further relieved of that hard and laborious work that would fall to their lot. (Hear, hear.) Is there nothing to take the place of that? Is there not in connection with the fruit growing, with the small kitchen garden, with the cultivation of flowers in and about the house, but especially in connection with the cultivation of small fruit out of doors, a work that appeals to the woman not only of the country but of the towns and villages who usually have at their disposal a small plot of ground attached to the house? There are several ways in which that can be made a benefit. In the first place there is the addition to the table; and I suppose if we can by any means increase the capabilities of the kitchen and the table, if we can add anything to the possibilities along that line, we shall certainly gladden the women's hearts, and I am quite certain we shall also gladden the men's hearts in this country. (Hear, hear.) There is thus supplied an additional amount of food for the table which is not only attractive in appearance, but at the same time is the most wholesome that can be placed there. There is the outdoor work which takes not only the woman but also the children out of doors day after day to give them out-of-door recreation and exercise which cannot be called hard work at all, but is more in the line of recreation or play. And so we might go on and instance many other things. Fruit growing on a small scale or on a large scale is one of the most civilizing influences that can be introduced in connection with the agriculture of this country. So that if we can do anything to encourage a farmer on his 200-acre farm, or the man on his small 50-acre lot, or the workingman on his small lot in the town or village, to set out a new bush or a new shrub or a new tree and add a little towards cultivating this and bringing a new productiveness and value to the place, I say that every man engaged in this work will be doing something that will not only be important to society as a whole, but will also be adding another blessing to the individual members of society. We might go on at greater length. I have simply touched upon these points because this seems to be more or less a ladies' meeting to-night. Two or three of us have been put in I suppose as a background for your addresses. It really is a ladies' meeting, and this is one point that should be brought home to the ladies, and if the ladies can be convinced in regard to this matter the whole question is finally settled. Now, there is this society in your midst, and I would like to simply suggest this, that from this town alone and this vicinity there ought to be added to the membership list of this society at least one hundred new members. (Hear, hear.) That would be very small, one dollar a piece; and what would be the effect? There would be brought back into this locality month by month the publications of this society, and year after year the annual reports going into a hundred homes to be read by several hundred people. One man would pick up one paper and get one idea, and another another; and one little point might repay ten-fold the small sum of $1 which you invested at the beginning. I can emphasize this

point, because I have no pecuniary interest. I am simply an unattached member of the society. This is a society that is doing a great good in this country. The fruit industry is going to be one of the great props upon which the farmers of this country must lean. The dairy industry is another prop. The old prop of grain growing has broken away under the farmers. The prop of live stock seems to have given way, though some think it will again brace up the farmer; but dairying and fruit growing seem to be the things upon which the farmers of this country are principally dependent; and when you go into the districts where fruit growing and dairying have been adopted as specialities, there you find less complaint about hard times and a more pleasant feeling pervading the general community; you find a little higher tone in the rural society—if you will understand that in the way in which I mean it—you will find there more contentment; and we can improve this as we can give an impetus to fruit growing as well as the dairying. The result will be that gradually we shall build up a more contented people not simply in our villages and towns, but also throughout the country; and I say that the hope of this country, the future of this country, is wrapped up in this one thing, in our having a happy, contented and prosperous community in our agricultural regions. (Applause.)

PRESIDENT RACE: The next item was to be an address by Mr. Morgan, of Barrie, but he is detained by professional duties. I would just say in relation to the address by Mr. James that our association does not devote itself entirely to fruit growing. We make an effort in the direction of floriculture and beautifying the home surroundings, tree planting, forestry and every thing of that kind. Personally I don't give as much attention to fruit growing as to floriculture. I cannot say to you "Come where the Lilies Bloom," but I can say to you "Come where the Roses Bloom." (Hear, hear.) I think I can say as an amateur I have the largest collection and variety of roses of any amateur in Ontario. (Applause.) I work among those roses myself; I know all about the work; and I may say there is nothing that will add so much to the pleasure and happiness of an individual as the cultivation of the beautiful in nature, and especially the rose. I am a lover of the rose, not because it is the emblem of my country, England, but for the influences it exerts upon myself, my family and the community round about. There is an influence in every rose and every flower. I do not think there is a gentleman in my town who receives so many pleasant calls from the fair ladies of the town as I do myself. (Hear, hear, and laughter.) I don't claim that there is any attraction in myself; but I can assure you that whenever there is going to be an entertainment or a social gathering in any part of the town, I have more ladies come to see me that particular afternoon than any other man in the town, because I have so many roses growing, and I take such a delight in giving them away, and I established a rule that I never give roses to any who didn't come themselves—so I insure very pleasant visits to my rosary; (laughter,) and I would recommend the good people of this town to give some time to the cultivation of roses. Christ said, "Consider the lilies." In doing so I believe that He gave as good direction to the people of that age as it was possible to give to any people, because the lily was an emblem of uprightness and purity, and of everything else that was good among the old Israelites. But you cannot give too much attention to the cultivation of all flowers. They have an ennobling influence. They appeal most directly to the finer influences and the very finest instincts of humanity. An American gentleman from Michigan visited our meeting in Hamilton, who told of having taken a drive through Ontario in order to learn for himself the character of the people. The Canadians who had emigrated to his state didn't impress him very highly. In his drive, his wife and daughter—about thirteen years of age accompanied him, and as they were passing through the district between Niagara and Hamilton, the young girl, after a long silence, during which she was viewing the beautiful scenery, suddenly exclaimed, "Papa, I know now why it is that all the people over here in Canada are such nice people, and that all the Canadians that we see over in Michigan were such a mean lot." On being asked for an explanation, she replied, "Well, papa, they have such a beautiful country over here that nobody but a mean man would leave this country and go to Michigan." (Laughter and applause.) Now, you don't want to have a higher compliment paid to your country than that; and we don't care how many mean men go to Michigan so long as we keep all the good people, such as we have met in Orillia.

Mr. BOULTER moved a vote of thanks to the orchestra, and all the kind friends who had provided the evening's entertainment.

Mr. CASTON seconded the motion, and spoke enthusiastically of the reception that had been accorded the members of the association on this visit. The motion was carried amid applause, and the meeting broke up at 10.30, after singing the National Anthem led by the quartette.

THIRD DAY—MORNING SESSION.

Mr. A. H. PETTIT read the treasurer's and auditors' reports, and said that the treasurer had also placed in the auditors' hands the balance as it is in the bank.

TREASURER'S REPORT FOR THE YEAR 1893-4.

Receipts.	$ c.	Expenditures.	$ c.
Balance on hand December 1st, 1893	148 21	Canadian Horticulturist	1,579 97
Members' fees	2,105 57	Salary of Secretary and Assistant	1,200 00
Government grant	1,800 00	Chromo Lithographs	246 90
Advertisements	241 28	Directors' expenses	200 60
Binding and bound volumes	44 20	Express and duty	182 33
Back numbers, etc	16 47	Plant distribution	162 97
		Postage and telegrams	147 94
		Commission	124 48
		Committees	112 85
		Stenographer	88 50
		Book binding	50 03
		Printing and stationery	60 50
		Auditors	20 00
		Discounts	18 59
		Russian exchange	9 70
		Petty cash	7 50
		Care of rooms at meeting	2 00
		Balance on hand December 1st, 1894	140 87
	4,355 73		4,355 73

We beg to report that we have examined the books and vouchers and found them correct. Much credit is due for the precise and neat manner in which they have been kept.

W. W. HILBORN, A. H. PETTIT, *Auditors.*

REPORT OF FINANCE COMMITTEE.

We the undersigned members of the Finance Committee would report that we have carefully examined the treasurer's accounts for the year and are pleased to find them in a satisfactory condition. Notwithstanding the general depression in business, our affairs have been so managed that we still have a balance to our credit of over one hundred dollars.

We recommend that hereafter in view of our limited resources that the expenses of the chairman of committees only shall have their expenses paid for attending the annual meetings to report, and said chairman shall only report at the request of the executive.

And we consider the thanks of the association are due to the secretary-treasurer for the faithful and economical manner in which the finances of the association have been managed.

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

The SECRETARY in answer to questions said that the total number of paid members now is 2,200.

The report was adopted on motion of Mr. COCKBURN, seconded by Mr. MORTON.

NOMINATING COMMITTEE.

The PRESIDENT nominated A. M. SMITH and Mr. MCNEILL. The three members of the Committee nominated by the meeting were Mr. FISHER nominated by Mr. Smith; Mr. WELLINGTON nominated by Mr. Hillborn; and Mr. TOOL, of Orillia, nominated by Mr. Beall.

The Committee then retired to select the officers of the Association.

The Secretary presented the following report:

REPORT ON VARIETIES OF FRUITS DISTRIBUTED TO AND TESTED BY THE MEMBERS OF THE ONTARIO FRUIT GROWERS' ASSOCIATION.

Since the year 1875, plants and trees have been annually distributed among the members for the express purpose of ascertaining their adaptability to the various sections of our province.

Reports concerning these have from time to time appeared in the *Canadian Horticulturist*, but it is only after many years that the real value of new varieties can be definitely ascertained.

The following report will give some idea to the public of the real value of the varieties thus far distributed. The date given after the name, is the year distributed by the Fruit Growers' Association of Ontario.

APPLES.

1. The *Swazie Pomme Grise*, (1875). A small, round, russett apple, for dessert purposes; season, December to April; quality best, but tree not productive enough to grow for profit. Mr. Thos. Beall, of Lindsay, Ont., writes in 1892, "My tree is alive yet. I get a few apples from it every year. It is not sufficiently hardy, and cannot be recommended for cultivation in this district. An unprofitable variety."

The *Wealthy*, (1882). A native of Minnesota. Tree hardy, vigorous and productive. Fruit, medium, regular, red streaked with white; season, September to April. The tree begins to bear young, and produces annual crops. Of great value everywhere, but especially at the north where it is a winter apple. A. Hood, of Barrie, has kept it until June. It will perhaps replace Fameuse in time. Mr. A. A. Wright, of Renfrew, says that the Wealthy is among the hardiest and most desirable kinds to plant in the cold north. The thermometer with him frequently sinks to 40° below zero, and yet he grows the Wealthy with great success, and advises planters in that climate to set any number of trees of this variety.

The *Ontario*, (1879). A fine large, round oblate apple, yellowish red in color, of good quality, suitable for both kitchen and market; keeps until May. A report from Victoria county says, "Young trees of this variety are doing very well, and scions grafted on Talman Sweet and on Tetofsky have made wonderful growth for several years, and are bearing well. The color of the skin when mature is a bright golden yellow, shaded and overlaid to the extent of about one-half with the most brilliant carmine. It is, probably, one of the best of apples in quality, and certainly the most profitable winter apple grown in Central Ontario, but reports show that it has not proved sufficiently hardy in the vicinity of Ottawa." A Nova Scotia report says; "This apple succeeds admirably here. The tree is hardy, a vigorous grower, and an early bearer. The quality is ordinary,

but the tree is enormously productive of large, long keeping apples." Mr. E. B. Edwards, Peterboro', writes: In the annual report for 1893, at page 59, I am credited with having made some statements as to this apple, which, according to my recollection, were not made by me, but by Mr. Beall, of Lindsay, who has had more experience with this tree than I have had. Before seeing the annual report—it only came to hand to-day—I was about to write to ask you or your correspondents whether the Ontario is or is not a hardy tree. My experience is very limited, but it points to the fact that the tree is not hardy, and that it is not a clean, healthy growing tree. Out of 100 standard trees of this variety planted two years ago, 25 have failed, having apparently been frozen after having made a fair start, and the stems of a number of others are scraggy and rough, indicating anything but a healthy growth. Of 60 small trees—one year old—which I set out a year ago, 8 failed altogether, and 17 others have apparently been frozen down to the snow line during the past winter. I have thus only a little over one-half of the 60 trees left in a healthy condition. My losses with other trees, some of them planted three years ago, some of them last year, and including plums and cherries, as well as apples, have not exceeded four per cent. Raised by the late Charles Arnold, of Paris. Northern Spy x Wagener

The *Canada Baldwin* (1884): The late Rev. Robert Burnet was quite an ardent advocate of this apple. He considered it a first rate dessert fruit and a good keeper, and stated in his report that the tree is very prolific. He said, "I think that when better known it will become a favorite market apple, as its color is a point in its favor, being showy and attractive." Possibly it may be more desirable for northern sections where larger but less hardy varieties cannot be grown, as it is not a large apple, and most growers of apples for profit find this to be an important characteristic.

The *Yellow Transparent* (1886): A valuable early variety. Not subject to scab. Larger than Early Harvest. Almost white when fully ripe. Ripens with Early Harvest, but hangs much longer on the tree.

The *Princess Louise* (1889): Not yet fully tested. The quality is excellent for dessert purposes; larger than Fameuse which it resembles in flavor. It has a beautiful red cheek when fully colored, and is very attractive. Its season is December to February.

Apricots.

The *Russian Apricot* (1890): Blooms too early, and is subject to curculio; therefore unproductive.

Cherries.

The *Vladimir* (1887): A small, oblate, dark red cherry imported by the late Charles Gibb from Russia for trial at the north, but proved to be of little value for Ontario. Badly affected with curculio. Mr. A. A. Wright, of Renfrew, says, "The Vladimir has been growing on my ground for four years and appears, as yet, to be quite hardy. It has a low growing bushy habit and the indications are that it will be iron-clad enough for our inclement weather. Unfortunately the fruit is not as good as we would like, but will do where we can get no better."

The *Ostheim* (1888): Like Vladimir, of little or no value in Ontario.

Currants.

Lee's Prolific Black (1882): Probably no improvement on Black Naples. Very large; bunch medium; color black. A poor bearer.

Fay's Prolific (1885): A large, red currant; ripens in July. Quality very good. Very valuable everywhere.

Dewberries.

The *Lucretia* (1886): Valuable where winter protection is needed, because of its trailing habit. Of little value where the finer varieties of blackberries can be grown.

Grapes.

The *Burnet* (1878): Medium size, oval, black grape, of good quality for table; too late in ripening for all the northern parts of Ontario. The vine is vigorous and hardy. Raised by the late P. C. Dempsey, Trenton, Ont. Hartford Black Hamburg.

The *Senasqua* (1881), Bunch large, berry medium; a round, black grape of very good quality for dessert. The vine is vigorous, productive and hardy. Not reliable.

The *Moore's Early* (1882): A large, round, black grape of good quality. Ripens early in September. Succeeds at the north. Moderately productive. Mr. W. M. Paterson, of Clarenceville, Que., says of this grape that, though good in quality, it proves in that province unproductive and slow growing variety.

The *Worden* (1883): A large, round, black grape of good quality; ripens soon after Moore's Early, and is more productive. It resembles Concord, but ripens about ten days sooner. Mr. W. M. Patterscn, of Clarenceville, Que., says that he thinks this grape must take the place of Concord in the province of Quebec where it is much appreciated for home use and for market.

The *Prentiss* (1884): A medium sized, round, greenish grape of good quality. Hardy. Unprofitable.

The *Early Victor* (1886): A good grape, but not sufficiently productive. A small, early, black grape of good quality. Mr. W. M. Patterson, of Clarenceville, Que., says of this grape that it cannot be classed as an early, but only as a medium early variety. Its maturity in a great measure depends upon the removal of a good proportion of its clusters soon after they are formed. It is a good grape for home use, for table or for wine.

The *Niagara* (1888): Proved to be equal to all its introducers said of it. The most profitable white grape in central or southern Ontario. An immense bearer.

The *Vergenues* (1889): A valuable red grape in southern Ontario. The quality is good and it is one of the best keepers we have. Rather late for central and northern Ontario.

The *Mills* (1891); A beautiful grape, but our season is not long enough for it. Chas. Hunter, of Niagara, says he grew it on heavy clay soil. The berries were large and black; the clusters very large and heavily shouldered. The vine a heavy bearer and quite hardy there. Ripened about the first week in October, and was then the best late black grape. The only objection is its think skin.

Pears.

The *Goodale* (1877): A large, yellowish green pear of good quality. Season, October to December. It did not succeed in the north.

Plums.

The *Glass Seedling* (1876): A large, black, oval plum of good quality, ripening in August. Mr. Beall, of Lindsay, wrote of it in 1892, "Tree hardy, moderately productive, and fruit of attractive appearance, which, although only second rate in quality, commands first price in market. Can be profitably grown."

Prunus Simoni (1890): Quite ornamental in fruit, but not good for anything else but ornament.

Raspberries.

The *Saunders* (1880): A hybrid between Philadelphia and Mammoth cluster. Originator, Wm. Saunders, then of London, Ont. Few reports. A medium sized, purple berry of good quality. Not recommended for profit. Was quite hardy in central Ontario and very prolific, but the peculiar color of the fruit made it entirely unsalable. Its cultivation, therefore, had to be abandoned.

The *Niagara* (1883): No report.

The *Marlboro* (1886): Large berry of fine color and, therefore, quite salable. It is quite early in ripening, but the canes are not vigorous, and it is not very productive. Somewhat tender at the north.

The *Hillborn* (1887): About the size of Gregg. It is hardy, vigorous and productive and the fruit of excellent quality. An accidental seedling introduced by Mr. W. W. Hilborn, then of Arkona, Ont.

The *Golden Queen* (1888): A sport of the Cuthbert, but scarcely as productive, and not as valuable for market. Originated in New Jersey.

The *Shaffer* (1890): A fine, vigorous grower and very productive. Its dull red color makes it less profitable than other varieties, but for home use it is unexcelled. A chance seedling and originated with Geo. Shaffer, Monroe Co., N. Y. Introduced by Chas. Green of Rochester, N. Y., 1878.

STRAWBERRIES.

The *Ontario* (1886): Of little value.

The *Jessie* (1889): A very large, showy strawberry, but not sufficiently productive to be profitable.

The *Bubach No. 5* (1890): One of the best varieties that we have at the present time; it is both large and productive.

The *Williams* (1891): A fine, large berry, very productive and profitable in some parts, on sandy soil, but on other parts reported on unfavorably.

In addition to the above the following have been distributed, but it is yet too soon to report upon them:

In 1891 Triomphe de Vienne pear; in 1892 Moore's Diamond grape, Idaho pear, Gipsy Girl apple, Round Borsdorfer apple, Blushed Calville apple, Silken Leaf apple, Little Hat apple; in 1893 Seedling black currant, Red Queen apple, Golden Reinette apple and Crimean apple.

The testing of new varieties may in future be best done by our fruit experiment stations. The Fruit Growers' Association will be able to work in harmony with these stations; and when any new varieties of fruits haye been proved worthy of introduction, we hope to be able to distribute them among our members, and thus benefit the fruit industry of our country.

In the spring of 1894 we distributed the following list of plants which were furnished us gratuitously by the Central Experimental Farm, Ottawa. With the list we also publish the descriptions of the same as given us by Prof. John Craig:

Acer Ginnala, Ginnalian maple.—This was first introduced from the Amur River region in Asia, by Dr. Regel, the eminent Russian botanist. Prof. Budd, of Ames, Ia., and the late Charles Gibb, of Abbotsford, Que., were instrumental in bringing it to America; and the plants which are this year being distributed to the fruit growers are raised partly from seed grown at Ames, Iowa, and at the Experimental Farm at Ottawa. Nicholson says, "The tree is generally classed as a variety of *Acer tartaricum*, but its habit is more graceful, and in this form the leaves are prettily cut and lobed, whilst the leaf-stalks and mid rib are more deeply colored." It never attains large size, and should be ranked among the arborescent shrubs in this respect. In the early autumn it is a thing of beauty upon the lawn—resplendent in a dress of bright crimson—it glows like a ball of fire, and warms the whole landscape. Another characteristic much appreciated in the north is its extreme hardiness. At Brandon, Man., and Indian Head, N.W.T., it has been reliable so far.

Caragana Arborescens, Siberian Pea Tree, as the name indicates, is a native of Siberia, and belongs to the pea family. It grows 15 to 20 feet high, and is very ornamental in early spring by reason of its light green, feathery blossoms. These are succeeded later by small pods enclosing the seeds, which may be sown as soon as ripe or kept till the following spring. They germinate very readily. Some 10,000 were grown

here last year in two beds 4x10 feet long. Like the maple, this is extremely hardy. I have been recently informed that hedges of this tree have been grown by settlers of the Mennonite districts, in Manitoba, which proves the assertion in regard to its hardiness.

Elaeagnus angustifolia, Wild olive.—This was, I believe, introduced from East Europe by Prof. Sargent, of the Arnold Arboretum, as well as Prof. Budd, of Ames. It is closely related and resembles in many respects our Western Buffalo Berry (*Shepherdia argentea*), but is much more silvery in leaf and twig. It grows rapidly, but does not attain large size. The flowers are inconspicuous, appear in early spring, and are extremely fragrant. From the name wild olive, people are occasionally led to believe that it is a fruit-bearing plant, which is quite inaccurate, as the fruit is entirely inedible. This is a very desirable bush for shrubberies.

Prunus pumila, Sand Cherry.—This plant is found growing wild in various portions of Western Canada and the United States, and being widely distributed, varies much in quality of fruit and character of growth. Its normal form is prostrate and depressed. In Nebraska it has been cultivated by early settlers for a number of years, and improved varieties will undoubtedly appear under cultivation before long. One is already being offered for sale under the name of Dwarf Rocky Mountain Cherry. This is claimed to be a special form native to certain regions of the Colorado Rockies. The fruit of the type is smaller than the Morello cherry, is nearly black when ripe, with a small proportion of pulp to pit. As a fruit plant it will be useful where the Morellos cannot be grown. It may be of much value as a dwarfing stock both for plum and cherry, and this phase is now under experiment. As a plant of possible value, and as a botanical curiosity, it is decidedly interesting.

The following description of the Sarah raspberry appeared in the Horticulturist's report for 1893 :

Sarah (Record number 4-38.).—Produced in London, Ont., by Prof. Saunders, from seed of Shaffer's Colossal. Plant a moderate grower, suckering freely, and propagating naturally only in this way. The foliage seems to be intermediate between the European raspberry, *Rubus Idæus*, and the American, *Rubus Strigosus*. The canes have been affected to some extent by anthracnose, but not more than Cuthbert or Marlboro growing alongside. Fruit large, round ; drupes large, deep garnet, firm, very juicy, pleasantly acid and exceptionally rich. A few ripe berries were found last year, and this year, at the time of the first picking of Cuthbert, but the main crop did not ripen till the season of Cuthbert was over, the last picking taking place each year from the 8th to 12th August.

A striking characteristic of this variety is its habit of ripening the fruit in consecutive order and much regularity, beginning with the terminal clusters of each branch. Of course this is in a measure true of all red raspberries, but none that I know of carry the peculiarity to the same extent.

In addition to these about two hundred each of the Pearl gooseberry and Green Mountain grape were sent out, besides one hundred Smith's raspberry, one hundred Moyer grapes, one hundred McIntosh Red apple, and several varieties of strawberries, in all about nineteen hundred packages.

For distribution in the spring of 1895 we have received from Mr. Wm. Saunders, Director of the Central Experimental Farm, the following plants :

500 Rosa rubifolia.
200 Cotoneaster vulgaris.
150 Douglas spruce.
150 Pinus ponderosa.
200 Sarah Raspberry.

In addition to these we propose sending out a few hundred more of the Pearl gooseberry and the Green Mountain grape.

All of which is respectfully submitted.

L. WOOLVERTON,
Secretary.

The SECRETARY proposed that a committee of one or three be appointed to look over this paper before its publication, and suggest any changes in the descriptions or reports of the various plants that have been sent out.

Mr. ROBSON (Lindsay): The Ontario apple grew a few years and then died. I think it will do best when grafted on some hardy variety.

Mr. MORTON: This report will be published, and if there are no limitations mentioned it will go out as the result of the Association's work.

Mr. PETTIT: I do not see why the Association should take any special action on that report. We sent out those fruits to be tried. We have now got the reports of those gentlemen as they appeared from time to time in the *Horticulturist*. Each gentleman's report is given. It is not necessary for us as a body to endorse any such report. I think the time is coming when we will get this thing a little more condensed than we have it, that is, that our experimenters will bring in a report on fruit adapted to that particular section.

The PRESIDENT: From whom does this report come?

Mr. MORTON: From Mr. Woolverton (who had retired meantime with the nominating committee). He mentioned to me that he would be glad that it should be looked over by individuals or others, and such things as thought well incorporated in it. It is by him, but it is sort of semi-official; it is by him as secretary.

Mr. M. PETTIT moved that this report be referred to a committee consisting of Messrs. Morton, Beall and Morris, to go over it and recommend what they see fit—whether it be published or changed or whatever they think best.

Prof. CRAIG suggested that Mr. White's name be put on as he is from that district.

Messrs. MORTON, BEALL and WHITE were therefore named as the committee.

REPORT OF COMMITTEE ON EXPERIMENTAL STATIONS.

Prof. CRAIG read the report of the committee for drafting a scheme for experimental stations. This report was adopted as follows:

Mr. Chairman,—Your committee, appointed at the last meeting of the association, held at Peterboro', in December, 1893, for the purpose of drafting a scheme for the then proposed system of experimental stations, beg to report briefly as follows:

It was found impossible, within the limits of the time at our disposal at Peterboro', to formulate a satisfactory plan; this fact we reported to the association, with the result that we were continued, with instructions to co-operate with the executive of the association. After considerable deliberation and correspondence a plan of action and basis for the foundation of an extended system of experimental stations was outlined. The main features of the scheme were: 1. To multiply the stations as much as possible, in order to increase to a maximum our knowledge of the behaviour of the same plant under varying conditions of soil and climate. 2. To secure to the association the valuable knowledge gained by individual experimenters, who from personal inclination have become specialists in certain lines of fruit culture. It was believed that by keeping these two thoughts in mind that a maximum of profit could be be attained with a minimum expenditure.

You are all aware that this report has been received by the executive of the association and acted upon by the Department of Agriculture in conjunction with this body.

It is a matter of considerable gratification to your committee that the initial steps in this important work have been so promptly taken, and with the hope that it will prove as successful as our warmest wishes desire, we now respectfully ask that this brief report be accepted and that this committee be discharged.

JOHN CRAIG,
A. MCNEILL,
W. W. HILBORN, } Committee.

NEW FRUITS EXAMINED, 1894.

Mr. D. W. BEADLE read the report of the committee on new fruits respecting such fruits as were examined during this year.

STRAWBERRIES.

John D. Roberts, Cobourg, Ont., sent to Mr. Beadle a strawberry basket filled to the brim with very large strawberries, the whole number of berries being seventeen. Mr. Roberts wrote, under date of June 26, 1894, thus: "With many other trees, shrubs, etc., I have imported from France and England four varieties of strawberries. The best I have is Laxton's Noble; the birds are eating so many that I have sent some unripe." The berries arrived in good order during Mr. Beadle's absence from home, so that only one remained in condition to be examined on the 30th June, when he returned. This probably was one of the "unripe" berries. Mr. Beadle reports that this was a very large berry, of a rich, deep red color, in form regular rounded conical, flesh firm, red throughout, juicy, in flavor vinous, with considerable strawberry aroma, and that his family unanimously declare that the berries, which they considerately ate to keep from spoiling, were delicious.

GOOSEBERRIES.

John Carnie, Paris, Ont., sent a package of gooseberries, which were received by Mr Beadle July 19, 1894, and which he describes as follows, viz.: color, yellowish green, veining of a lighter shade and very distinct; form, varying from long to roundish oval; size, above medium to small; measurements, length $\frac{3}{4}$ in. to $1\frac{1}{4}$ in.; circumference $2\frac{5}{8}$ in. to $3\frac{1}{8}$ in.; skin, thick and tough; flavor, acid; apparently the fruit was unripe. Mr. Carnie writes that this is the 21st crop borne by a plant gotten from the north of Scotland in the spring of 1871, which has never been affected with mildew, though surrounded by another kind covered with it. Growing in a dry, gravelly soil, Mr. Allan says, "it is, in my opinion, not a new seedling but an old variety which has been introduced under various names. Is it not Gascon? If so, it is peculiar in its tendency to drop its leaves early. The same berry has been sold as Barber's Best, Valentine, and some other names. As I find it, rather imperfect as it reached me, quality not first class, and in any case only useful for cooking." Where Whitesmith and Industry can be grown, it is the opinion of the committee that this variety cannot be considered valuable.

PLUMS.

Keep Brothers, Winona, Ont.; received August 24th, 1894. Three specimens. Color, marbled red on a light yellow ground; form, egg-shape; length, $1\frac{1}{2}$ to $1\frac{5}{8}$ in.; circumference, $4\frac{1}{8}$ to $4\frac{3}{8}$ in.; suture distinct from stem to apex; stem, $\frac{1}{2}$ in. long, slender, curved, inserted in a very slight cavity; flesh, yellow, coarse; acid, not rich; seemingly not fully ripe; stone, cling, oval, tapering to a point at upper end, 1 in. long by $\frac{1}{2}$ in. broad, sides moderately swollen, covered with numerous small depressions, deep suture on one edge, three ridges on the other, the centre ridge highest, with an almost dentate crest. Fruit resembles the Red Egg, but smaller, with no points of improvement over that variety.

Richard Trotter, Owen Sound, Ont.; received August 25, 1894. Color, light greenish yellow, with a few broken stripes of deeper shade; form, unsymmetrical egg-shape; length, $2\frac{1}{8}$ in.; circumference 6 in.; suture, a mere line from stem to apex; stem, $\frac{3}{4}$ in. long, moderately stout, slightly curved, inserted in a small shallow cavity and terminating in a knob; flesh, light yellow, firm, juicy, fibrous, sub-acid, perhaps not fully ripe; stone, partially a cling, oval, thick, broad at one edge, having three prominent ridges, one of which projects into a point, the other end sharp and without suture; surface rough. This gives promise of being a valuable fruit, having, when fully ripe, a rich vinous flavor, with quality very good. The above description is made from a single

specimen, the only one received by the writer. Mr. Allan says that the specimen received by him showed, indistinctly, appearances of mottled blush on sunny cheek; flesh, green with a strong tinge of yellow, a little coarse, slightly acid but pleasant, and designates it a freestone. He considers it first class for cooking, and a good shipper, and remarks that it is too valuable to be lost sight of.

Mr. Trotter has named it Lillian Augusta, and says that the tree is hardy and a good bearer.

W. H. Snelling, Ottawa, Ont., wild plum (*P. Hortulana*), August 25, 1894. Five specimens; color, marbled red on a yellow ground; form, nearly round, like a marble; length, 1¼ in.; circumference, 4¼ in.; suture, merely a line; stem, 1 in. long, somewhat curved, inserted in a very slight depression; flesh, yellow, soft, juicy, vinous, very good; stone, partial cling, flat, nearly circular, surface rough, ridges not prominent; skin, very thin and tender, with some astringency. This is one of the best of its class that we have seen; will surely be esteemed where only our native varieties endure the climate.

Mr. Allan says of this variety that it has a richness of flavor that would render it most desirable for cooking, and is of larger size and better flavor than most of our wild plums.

Tree received by Mr. W. H. Snelling, New Edinburg, Ont., from Gatineau Point, Indiana, is now 14 years of age. Has proved an annual bearer. Thus far it has not been affected by rot or the spot disease.

Thomas Holloway, Clinton, Ont., August 31, 1894. Three specimens. Tree has heavy foliage, is a great bearer, five or six years in bearing; is trained on east wall of the house; fruit, medium, 1⅜ in. long to 1⅝ in.; circumference 4½ in. to 5 in.; form, roundish oblong; suture, but a line, nearly obliterated in some; skin, yellow, very thickly sprinkled with white dots, occasional light brown specks, and a very thin white bloom, tough, but thin; stalk, medium to slender, ½ in. long, straight; cavity small, deep, clasping the stem by a fleshy ring at insertion; flesh, yellow, juicy, a little coarse, rich vinous flavor, very good; stone, cling, oval, thick, with suture the whole length of the sharp edge, and three strong ridges the entire length of the opposite edge. These plums exhale a rich fruity odor, and are esteemed by Mrs. Holloway as better for preserving than any of the other many varieties grown by Mr. Holloway.

Mr. Allan says of this: "I remark its beauty, the small pit for a seedling, and good quality as a cooker, and that it is worthy of cultivation." He adds that he knows Mr. Holloway to be a reliable man.

R. C. Bradshaw, Thornhill, Manitoba, September 3rd, 1894. Five specimens wild plums, color red, some very dark red, very thickly sprinkled with exceedingly minute dots; skin very thick; size, small, 1¼ to 1 in. long; circumferenee, 3⅝ to 3¼ in.; form, round; suture, a mere line; stalk, ¼ in. long, curved; cavity only a depression; flesh, yellow, very juicy, nothing but a watery pulp permeated by tough fibre, sweet, but without other flavor; quality, poor; stone, free, round, thick, no suture on the thin edge, opposite edge marked by raised line on each side; length and breadth about equal.

Mr. Allan says: "No doubt valuable there where hardiness is a requisite, as it is a really fleshy, good preserving plum, though not high flavored." Recommended for trial only in Manitoba and the Territories.

John Wood, Monticello, Wellington County, Ont., September 8th, 1894. Ten specimens, of which five were forwarded to Mr. Craig. Fruit, medium to small, 1¼ to 1⅜ in. long; circumference, 3⅝ to 4¼ in.; form, round ovate; suture, obliterated; skin, dark purple, almost black in the sun, thickly dotted all over with minute grey specks and covered with a very thin white bloom; stalk short, moderately stout, usually somewhat curved; cavity, round, smooth, of moderate depth; flesh, greenish, firm, not juicy, yet not dry, sub-acid, flavor as if unripe; stone, free; ¾ in. long by ½ in. wide, tapering at the upper end, suture deep and narrow; opposite edge sharp, flanked on both sides by a ridge, surface of sides smooth, but uneven and swollen.

Evidently one of the Damson type, but not sufficiently marked in regard to quality to entitle it to a commendation.

Richard Trotter, Owen Sound, September 11th, 1894. Suggests for name, "John A." One specimen; fruit large, 1⅞ in. long; circumference, 4¾ in; form, long oval;

suture, just a line from stem to apex; skin, a dark purple in the sun, reddish in the shade, thickly sprinkled with minute grey specks, specially on the upper half, covered with a thin blue bloom, and both thick and tough; stalk, straight, moderately stout, 1¼ in. long; cavity, broad, round, shallow, with a fleshy ring which adheres to the stem at the point of insertion; flesh, very light yellow, moderately juicy, vinous, flavor agreeable, good; stone, partially clinging, oval, bluntly tapering at the upper end, deeply sutured, opposite edge carinate, flanked on each side by a continuous ridge; surface of the sides somewhat roughened; 1⅛ in. long by ¾ in. broad.

Mr. Allan says: "I consider it worthy of further test, as it is good in quality, having that of a fine cooker, and should be valuable for market."

Produced by pollenizing a local seedling named Evelyn with Fellenberg. Tree said by Mr. T. to be healthy, a rapid, strong grower with heavy foliage. Has borne for two years only. Fruit hangs well to the tree and keeps well after being gathered. Twelve specimens weighed 1¼ lbs. Commended for cultivation.

Daniel H. Hoover, Almira, September 11th, 1894. Seven specimens. No. 1. "Tree about seventeen years old; grafted near the ground on a common blue plum. The graft received from a friend in Pennsylvania who could not give any name. Tree is iron clad and nearly black knot proof, bears regularly, generally ripening after the middle of September, but earlier this year owing to drouth and heat." Such is Mr. Hoover's account of the tree, which he thinks a seedling. With the fruit he sent three leaves from the tree. The leaves are ovate, the two smaller taper at both ends, the largest tapers towards the apex and is rounded towards the petiole; all are coarsely and irregularly serrate; petioles delicately pubescent, moderately stout, an inch long; upper surface dark green and glossy, under side pale green and covered with a delicate white pubesence specially noticeable on the veining, midrib prominent with three quite strong branches from each side, size varying from 3¾ to 3⅜ in. long by 2¼ to 1¾ in. broad; fruit, above medium, 1½ to 1⅝ in. long; circumference, 4½ to 5 in.; form, ovate, flattened at both ends, most so at stem end; suture, a line from stem to apex with scarcely any depression; apex marked by a dot slightly raised above the surface; stem, thick, dark purplish red on the exposed side, bright red in the shade, and thickly sprinkled all over with small gray specks, the whole overspread with a blue bloom; stalk, ¾ to 1 in. long, slender, curved at the extremity, surrounded at its insertion by a fleshy ring that adheres to the stalk; cavity, deep, smooth, ranging from ovate to almost round, situate in a shallow depression; flesh, yellow, firm, mealy, moderately juicy, rich vinous flavor, separating freely from the skin; stone, small, ¾ in. long by ⅝ in. wide, deep suture down one edge, the other carinate flanked by moderate crests, outline oval, drawn to a truncated point at upper end, almost free, clinging but slightly at the edges, surface of sides almost smooth.

The color of this plum has a marked resemblance to that of Reine Claude Violette, which is the Purple Gage of Downing.

Mr. Allan thinks this possible seedling worthy of further investigation and report.

Mr. Craig is of the opinion that it is a European variety of which the name has been lost. He was unable to identify it. Worthy of further investigation.

D. B. Hoover, Almira, September 11th, 1894. One specimen of No. 2. Fruit small; round ovate; 1⅛ in. long; circumference, 4 in.; suture, a line without any depression; apex marked with a dot; skin, thin, light red in the shade, dark red in the sun, numerous specks scarcely visible scattered over the whole surface; no bloom on this sample; stalk, ⅝ in. long, curved, slender, a small ring at its insertion in a cavity large and deep for the size of the plum; flesh, light yellow, firm, mealy, not juicy, sub-acid, not rich, separates from the skin like a boiled potato; stone, free, thick, oval, about equally pointed at both ends, one edge distinctly sutured, the other carinate flanked with but slight ridges, surface of sides rough; ¾ in. long by ⅝ in. wide; much inferior in quality to No. 1.

Mr. Allan says smaller and not so valuable as No. 1, and the committee do not think it worthy of commendation.

D. B. Hoover, Almira, September 19th, 1894. Five specimens; three leaves accompanied the fruit, which were broad ovate tapering abruptly to a point, and gradually towards the petiole, edges coarsely serrate, midrib prominent with less prominent branch-

ing veins, surface smooth and dark green, underside wooly. Fruit medium, 1⅜ in. long, circumference, 4⅜ in., usually flattened at the stem end; skin, thin, red to dark red, thickly sprinkled with exceedingly minute dots and overspread with a blue bloom; stalk, from ½ in. to ¾ in. long, moderately stout, straight, inserted in a broad shallow cavity; suture, a mere line in a very slight depression; apex marked by a slightly elevated dot; flesh, yellow, mealy, not juicy, moderately rich, blended vinous and sugary; flavor pleasant, quality good, seperates freely from the stone, which is nearly round, thick; sutured on the thin edge, the other edge carinate with a strongly projecting keel, length and breadth about equal, ⅜ in.

Not superior or even equal to other named varieties of the same season.

Experimental Farm, Ottawa, September 19th, 1894. Russian plum, "Moldavka." Fruit large, oval, flattened at stem end; 1½ in. long; circumference, 4⅞ in.; suture, a very slight, broad depression running from stem to apex; skin, thick, very dark purple, almost black, marked with a few irregular russet patches of varying sizes, and a few russet dots, the whole covered with a blue bloom; stalk, ½ in. long, moderately stout, with a fleshy adhering ring at the point of insertion; cavity large, round and deep; apex marked by a large round russet dot; flesh, yellow, firm, mealy, not juicy, sub acid, rich with a peculiar disagreeable medicinal flavor; adhering to the stone, which is oval, tapering to a point at the upper end, a deep suture in the sharp edge, the other broadly carinate, the sides swollen, length almost 1 in., breadth ⅜ in.

Only one specimen received. Season, September 1 to 6. Specimen examined had been kept in a cellar for nearly three weeks and flavor may have been affected thereby. Tree hardy and vigorous at Ottawa.

Mr. Craig is of the opinion that this would be valuable for cold climates.

Experimental Farm, Ottawa, September 19th, 1894. Russian "Early Red." One specimen; fruit, medium, round, oval; 1½ in. long; circumference, 4⅜ in.; suture, a line from stem to apex, with scarcely any appreciable depression; skin, thick, reddish purple, thickly sprinkled with round russet dots, overspread with a blue bloom; stalk, ½ in. long, moderately stout, curved, growing gradually stouter to its insertion in a small, round, shallow cavity, where the skin adheres to the stem; apex indicated by a small russet dot; flesh, yellow, firm, mealy, not juicy, sub-acid, rich, with an agreeable flavor; adheres strongly to the stone, which is long oval, tapering towards both ends, the sharper edge sutured, the other abruptly ridged on one side giving the edge the appearance of being creased, sides swollen and rough, length 1 in., breadth, a little more than ½ in.

Tree a round topped moderately vigorous grower, thus far a light annual bearer. Promising when other varieties of *prunus domestica* fail.

Peaches.

J. C. Davis, Freeman, Halton County, September 7th, 1894. One specimen; fruit large; 2¼ in. long; circumference, 7⅜ in.; round, ovate, somewhat flattened on both sides; suture, shallow, well marked at both ends, though barely visible at the centre, and extending beyond the apex, which is slightly sunken; skin, yellow, marbled with purplish red in the sun; flesh, yellow, not red next to the stone, save a red line opposite the suture, juicy, melting, vinous, almost sub-acid, not high flavored, quality not above good, separates freely from the stone, which is large, 1⅜ in. long by 1¼ wide.

This seedling was found by Mr. Davis in an unused raspberry patch, and has borne two years.

Mr. Craig thinks it compares this season very favorably with Early Crawford in size, appearance and quality.

Apples.

Thos. W. Letts, Calumet Island, Que.; latitude 45° north; August 24th, 1894. Two specimens received. Size, large, 2¼ in. long; circumference 8¾ in.; skin, light yellow, marbled with bright red in the sun, and thickly sprinkled with small irregular-shaped russet dots; calyx open, segments erect, short and pointed; basin small, ¾ in. broad,

smooth; stem, stout, straight, $\frac{5}{8}$ in. long; cavity deep, narrow, russeted; flesh white, not fine grained, granular, dry and moderately sweet; core large; quality barely good, quite below that of Sweet Bough.

Mr. Allan says it may be of some value where grown, but has nothing to recommend it for general use; flavor an insipid sweet; traces of dry rot under the skin. Not commended.

C. J. Willson, Greenwood, Ontario Co. August 27th, 1894. Six specimens. Tree four years old, growing in hard clay soil on a side hill; fruit small to medium, 2 to $2\frac{1}{8}$ in. long; circumference $7\frac{1}{2}$ to $9\frac{1}{4}$ in.; round to roundish oblong, obscurely ribbed in the larger specimens; skin, light yellow, nearly white, sprinkled with minute light colored dots, oily; stalk, $\frac{3}{8}$ in. long, slender and straight; cavity, deep and lightly russeted; calyx, closed, segments long and foliaceous; basin shallow, slightly corrugated; flesh, white, grain of medium fineness; juicy, acid, not rich; core, medium; soons shows symptoms of decay; not of sufficient quality to merit dissemination.

C. F. Honner, Amherstburg, Ont., October 10th, 1894. Two specimens. Tree planted by some original settler of that district; fruit medium, round, flattened at both ends; about $1\frac{1}{2}$ in. long; circumference, 8 to $8\frac{1}{4}$ in.; skin, red, light green on shaded part, sprinkled especially towards the blossom end with small white dots, in the centre of which is a russet speck, long oval in outline, often appearing as if the skin were cracked in the direction of the long diameter; stem, stout, about $\frac{1}{2}$ in. long, set in a deep, smooth, round, russeted cavity; calyx, closed; basin, moderately deep, broad and corrugated; flesh, white, fine grained, somewhat tough, not juicy, sweet and rich, quality very good; core medium.

Mr. Allan says: "It may be a seedling, but so close to Bailey Sweet that it can hardly be distinguished from it. I think it is Bailey Sweet." Mr. Craig says that this apple is the exact type of Dery's Baldwin, described last year. It is pronouncedly sweet; shows some signs of apple scab; as a sweet baking apple it may have value.

The following varieties were received from the Experimental Farm, Ottawa, and examined October 23rd, 1894:

Gideon, Minnesota, by Peter M. Gideon. Fruit large, $2\frac{3}{4}$ in. long; circumference, 10 in.; conical to oblate; skin, yellow, a light blush on exposed side, mottled with yellow spots, numerous white dots sprinkled over the yellow portion; stalk about 1 in. long; cavity, deep and somewhat corrugated; calyx, closed; basin, of moderate depth, wrinkled; flesh very light yellow, grain half-fine, crisp, juicy, sub-acid, not rich, nor high flavored, probably a good cooking apple, but not desirable for dessert; core, large, also some indications of a tendency to decay at the core.

Mr. Allan says of it: "In eastern Ontario will no doubt be an acquisition in its season. It would not ship well, at all events not to Britain, but in local markets would be attractive. Coming in the same season as Wealthy it can hardly, with our present experience, be commended, as this variety succeeds so well over such a wide area.

McMahon's White, Wisconsin, G. P. Peffer. Tree is said to have endured several seasons of 40° F.; fruit, very large; $2\frac{3}{4}$ in. to 3 in. long; circumference, $10\frac{1}{2}$ in. to $11\frac{1}{2}$ in.; irregular oval, flattened and broad at the stem end, narrowing broadly towards the eye; skin, yellow, delicately tinted on the sunny side, sprinkled very thickly with obscure specks, especially towards the blossom end; stalk, an inch long, moderately stout, curved; cavity, deep, broad, irregular, russeted; calyx open, segments reflexed; basin, broad, deep, irregular, wrinkled; flesh, white, coarse, breaking, moderately juicy, sub-acid, with some body, yet not rich nor high flavored; core, remarkably small for so large an apple. An excellent cooking apple, well worthy of trial in our colder latitudes.

Mr. Allan says this is "an attractive apple, but the color not suited to markets. A fine fall cooker." The tree is one of the finest types of an apple tree that can be found; strong, vigorous, and healthy; has never been injured by the Ottawa winter, and has proved fairly productive.

Scott's Winter, Vermont. Fruit, medium to small; $2\frac{1}{4}$ in. to 2 in. long; circumference, $8\frac{1}{2}$ in. to 8 in.; round oval; skin, greenish yellow ground, marbled and striped with dull dark red, very dark where most exposed, numerous minute white specks

scattered over the surface ; stalk, short, very stout, scarcely extending above the cavity, which is moderately deep, round, smooth, russeted ; calyx closed, segments reflexed at the tips ; basin, broad, of moderate depth, and somewhat wrinkled ; flesh, almost white, firm, juicy, almost fine grained, breaking, sub-acid, pleasant flavor at this date, Oct. 23rd. Should be tested when in season to form a just opinion of its quality.

Mr. Allan says : "Color good for market, but too small to be suitable for export, or indeed any market, and quality not good enough to recommend it for dessert." Valuable as a late winter apple. Tree hardy and fairly productive.

Orange Winter. Mr. Craig thinks it originated in Wisconsin with the late G. P. Peffer. Possibly this is identical with Clark's Orange of some catalogues, which is said to have originated in Pewaukee, Wisconsin. Fruit, large, 2½ in. long ; circumference 10 in. ; irregular, conical to oblate ; skin yellow, thickly sprinkled with brown specks ; stalk, short, moderately stout, usually not extending above the cavity, which is deep, broad and corrugated ; calyx, closed ; segments long, narrow, pointed ; basin, moderately deep and wrinkled ; flesh, yellowish, almost coarse, crisp, juicy, sub-acid with considerable body but not rich ; flavor, pleasant. Probably a "very good" cooking apple in its season, and ranking as "good" for the dessert. The specimens received indicate it to be an early winter apple when grown in the climate of Ottawa, and the season claimed for Clark's Orange is November to January.

Mr. Allan says : "Has a mild flavor, lacking character, that makes an apple desirable for Ontario, but valuable locally on account of hardiness. Would ship as a fall apple, but color not suitable for value."

Tree at Ottawa has proved a sound topped, symmetical grower, and has been uninjured by winter so far.

Salome. Originated in Illinois. Tree said to be a strong grower, equal to Wealthy in hardiness, to hold its fruit firmly even against strong wind storms, and to be an early and annual bearer, though yielding a heavier crop on alternate years. Fruit medium or less, 2½ to 2¼ in. long ; circumference 9½ in. ; conical to oblate, somewhat ribbed ; skin at this date, October 24th, light green splashed and nearly overspread with dull red, which is very pale and much broken, profusely sprinkled with light dots ; stalk, long, 1 in., slender, curved ; cavity, broad, moderately deep or deep, smooth ; calyx, closed ; segments small, erect ; basin, shallow, broad, corrugated ; flesh, greenish white, almost fine grained, crisp, juicy, sub-acid, having seemingly considerable body, but the flavor told that it was quite unripe ; core medium.

Mr. Beadle first saw this apple at a meeting of the Western Horticultural Society in New Orleans, several years ago, in the latter part of February. The samples shown there were much higher colored than these from Ottawa, and seemed to be in season at that date. They were grown in Illinois. It is claimed for this variety that with ordinary care it keeps well until July.

Mr. Allan says it "is too small for market value, and quality not quite good enough to be of value for general cultivation in Ontario."

Mr. Craig says the tree has done remarkably well at Ottawa, but has not been productive, although hardy. The first samples of fruit were produced this year on trees planted six years ago.

Cross Russian. Fruit, large, 2½ in. long ; circumference, 10½ in. ; form irregular, flattened ; skin, yellow, ground mottled and splashed with red, in some blotched with russet, sparsely sprinkled with minute dots ; stalk, short, about ½ in., stout, straight, not exceeding the cavity, which is deep and large, russeted, in some specimens slightly corrugated, in others irregular ; clayx, nearly closed ; segments, large and stiff ; basin, broad, shallow and often irregular ; flesh, nearly white, coarse, not juicy, without flavor, possibly over ripe ; core, small. Of doubtful value in any climate.

Mr. Allan says, "a fine, large, high colored apple of the Alexander type, without quality." Only commended for localities where other varieties, by reason of climatic difficulties, cannot be grown.

Longfield Russian. Fruit, medium, 2½ in. in length ; circumference, 8 in. ; form, in some oblate, in others, conical ; skin, yellow, slightly tinged with reddish brown on the

exposed side, scatteringly sprinkled with minute specks; stalk about ½ in. long, slender; cavity, shallow, russeted usually, sometimes the russet is wanting; calyx, open; segments, long and tapering; basin, shallow, slightly wrinkled; flesh, white, almost fine grained, juicy, mild, sub-acid, breaking, not rich, yet of agreeable flavor; core, medium, of value only where higher flavored sorts do not endure the climate. Fully ripe now, October 23rd, 1894.

Mr. Allan considers it too poor in quality to be useful. Tree hardy and very productive.

Simbirsk No. 5, Russian. Fruit, medium to small; length, 1⅞ in. to 2⅛ in.; circumference, 7½ to 8¼ in.; form, irregular oval, obscurely ribbed; skin in some, dull red, in others, bright red, and some without red on shaded portion, a few minute dots can be seen on close inspection; stalk, short, sometimes not projecting beyond the cavity, stout; cavity of modern depth, round, smooth, usually russeted; calyx not always completely closed; segments, coarse, long and bluntly pointed; basin, shallow, usually irregularly plaited; flesh, greenish white, almost coarse, not juicy, not much flavor, and what there is, disagreeable as if unripe, though quite mellow and possibly over-ripe; core, large for the size of the fruit. Cannot be of much value anywhere.

Mr. Allan calls it too poor and too small for value. Mr. Craig says this fruited as a top graft for the first time.

Melonen, or Melon Apple, Russian. Fruit, medium; ovoid conical, slightly ribbed, especially towards the eye; skin, dull red, decidedly darker in the sun, a few white specks barely discernible; stalk, long, 1¼ in., slender, curved; cavity, narrow, deep, round, smooth; calyx, closed; segments, pointed and reflexed; basin, shallow, of moderate breadth, irregularly plaited; flesh, greenish white, almost fine grained, moderately juicy, mellow, bordering on sub-acid, with a poor, disagreeable flavor; core, medium. Not worth growing in any part of Ontario.

Mr. Allan considers it poor in quality and undesirable. Mr. Craig says it is rather a pretty apple but entirely lacking in quality.

Green Crimean Russian. Fruit, above medium; length, 2½ in.; circumference, 9 in., conical; skin, lemon yellow, thickly sprinkled with light specks; stalk, ½ in., stout, not projecting beyond the cavity, which is deep, broad and irregular; calyx, closed; basin, shallow, broad, coarsely wrinkled; flesh, yellowish white, nearly coarse, juicy, tough, almost a very mild sub-acid, no flavor; core, medium. Can hardly be of any value this side of the north pole.

Mr. Allan designated it "too poor in quality to be useful."

Bombarger Russian. Fruit, large; length, 2½ in.; circumference, 10½ in.; form, oblate or conical, heavily ribbed; skin, light straw color, handsomely marbled with bright red on the exposed surface, very minute white dots are thinly scattered over the red, gray specks over the yellow portion; stalk, short, stout, not usually extending beyond the cavity, which is deep, broad and strongly corrugated; calyx, closed; basin of moderate depth, broad, heavily plaited; flesh, light yellow, crisp, almost fine grained, juicy, mild sub-acid, not rich, but pleasant flavor; quality, good. A showy fruit that should be valuable in our cold north sections.

Mr. Allan describes it to be "a large, well colored, fine appearing apple, but quality poor. It would prove valuable in the 'cold north,' its size and color would sell it in the British market, and it would ship there." Mr. Craig concurs in the first opinion given of this variety.

The following varieties have been examined by Mr. Allan only, and the descriptions are his:

From John Breckinridge, Goderich, Chance Seedling. Tree about 18 years old, a strong grower, spreading, irregular, very productive; fruit, medium to large, round, conical, pale green ground, striped and splashed with red; stalk, slender, about an inch long, inserted in a deep cavity; calyx, closed, and set in a basin, sometimes slightly corrugated with scarcely any depression; flesh, white, fine grained, sub-acid, pleasant, good. Would ship well after the New Year and keeps until June. Worthy of further investigation and trial.

From Abraham Rowand, Walkerton. Fruit, large; form and color very much like the Ben Davis; calyx set in a deep, corrugated, somewhat uneven basin; stem, short, set in a medium cavity, color splashed all over, covered with a fine bluish bloom; quality is good, fine grained juicy, slight tinge of pleasant acid, winter. Would make an attractive market apple, good shipper. This I consider worthy of testing further with a view of introducing.

The five following varieties were examined by Mr. Allan at Montreal Horticultural Society Exhibition. The descriptions are by Mr. Allan.

Cataraqui, a cross from Spy and McIntosh Red, by D. Nicol, of Cataraqui. It has markings of both kinds, follows Spy as a keeper as well as form, but higher in color. Quality equal to McIntosh Red, valuable for eastern Ontario on account of hardiness.

Winter St. Lawrence, as grown around Montreal is one of the most attractive apples I have seen for market. It thoroughly resembles our fall St. Lawrence in form and color, only of a much darker shade in coloring, and a late variety. Would ship well for winter and I am sure would be a favorite in market. Quality follows the fall St. Lawrence I fancy, although I did not of course test a ripe one.

Seedling, grown by R. Jack, Chateauquay. Large, green with yellowish tinge, strongly resembling cranberry Pippin in form; calyx closed, set in a deep corrugated basin; quality good, spicy, aromatic, sub-acid; stem stout, set in a deep basin; many specimens showing fleshy lip on stem; season, late fall.

Seedling, grown by Thos. Scott, jr., St. Laurent. In form and size resembling Wealthy; color green, covered with indistinct white dottings, splashed and streaked with bright red; calyx closed, set in uneven basin, depressed and corrugated; stem an inch long, set in smooth, deep cavity; quality good, acid, sprightly; flesh greenish white; should prove a good keeper and shipper; season, winter.

Seedling, grown by Geo. B. Edwards, Coney Hill. Large and smooth, resembling Cayuga Redstreak in form and color; calyx closed, set in a shallow basin, smooth; green, inclined to yellow, splashed with crimson and streaked; stem short and stout, set in smooth cavity; quality good, sprightly; season late fall and first of winter.

Crab Seedling. Sent by W. J. Kerr and grown by Ed. Burchell, Merrickville, Ont. Received by Mr. Craig. Quite a striking type of a keeping variety of the yellow Siberian Crab was received on October 8th, and kept in the warm temperature of my office for over a month. Size, $1\frac{3}{4}$ inches in diameter; round, with all the Siberian characteristics, but not markedly astringent. On account of its keeping qualities it should not be lost track of.

Plums. From A. M. Smith, St. Catharines, Ont. Received by Mr. Craig. Size, $1\frac{3}{8}$ by $1\frac{1}{4}$ inches, nearly round. Blue, with a thick purplish bloom, stem $\frac{3}{4}$ to 1 inch long; cavity, narrow and small, suture indistinctly marked; skin, thin; flesh, brownish color; juicy, fairly sweet and moderately firm; adherent to stone, which is small and roundish. Evidently of the Damson type, valuable on account of its lateness.

CONDENSED REPORT OF NEW FRUITS TO PRESENT TIME.

Report by the standing committee on new fruits, of progress made in summarizing all the work of the Association for the past and preceding years relating to new fruits.

Upon an examination of the work of the Association relating to new fruits during preceding years, your committee found that, beginning with the year 1868, new fruits had been brought to the attention of the Association during nearly every year of its existence, and that a great mass of material had been collected in its reports relating to new varieties of every fruit grown in this climate. We also saw that in order to make this material available it would be necessary to bring it into a condensed form, and that this involved a considerable amount of labor, so great that it seemed advisable not to undertake to prepare a condensation of the whole for submission at one time. Inasmuch

as the apple is our most important fruit, it was thought best to take that up first. Accordingly a table has been prepared showing as fully as possible the name and address of the exhibitor, the year when exhibited, the size, color, texture, flavor, quality, use and season of the fruit, and the remarks of the committee that examined the exhibit.

We learn from this table that there has been, during the past quarter of a century, a hundred exhibitors of new fruits, who had taken the pains to show us not less than a hundred and fifty varieties of new apples. Of these some thirty varieties are specially mentioned by the examining committee in terms such as the following, viz.: "Very promising," "think favorably," "desire to see them when in season," "not to be overlooked," "to be looked after," "worthy of trial," "well worthy of future notice," "prize of $5 awarded," "worthy of extended cultivation," "first prize," "worthy of cultivation," "recommended for general cultivation," "deserves to be widely disseminated," "advise that the tree be inspected," "commended," "highly commended," and the like. We also learn that in by far the greater number of cases there has been nothing done in the way of following up the recommendations made, so that in the great majority of cases no practical benefit has accrued to the country from these labors. A glance at the table shows also that the information given regarding these fruits is often seriously defective. Very often no mention is made of the season of maturity, none of the quality, and often the recognized pomological terms for quality, "good, very good, best," have not been observed, so that it is not possible to know even when the term "good" is used just what meaning is intended. So likewise of all the other columns of the table, either nothing is said, or it is difficult to decide what weight should be given to what is said. When it is said that the flavor is "pleasant," or "aromatic," or "sprightly," without any further qualification, we are yet in the dark as to whether it is acid, subacid, or sweet.

It is probable that some of these apples are well worthy of being fully investigated, possibly young trees, or if not, very probably scions could be procured of many of them, and these, by grafting into vigorous trees in some of our experimental stations, could soon be brought into bearing, and the value of any of them for cultivation, either general or local, be ascertained.

Your committee deem it due to those who have been at the pains to submit new fruits, especially in the case of Canadian Seedlings, and due to the beneficial work of our Association, that the examination into the value of them be completed as speedily as possible. To do this would entail some correspondence, as well as securing scions of the most promising varieties which might be propagated for trial at the various testing stations for apples now being inaugurated by the Association. This phase of the question is respectively submitted to the Board of Directors for their consideration.

SEEDLING APPLES.

O. T. SPRINGER, Burlington, 1868: medium size, sub-acid, good, desert, February-March. Tree very hardy, annual bearer.

JAMES COWHERD, Newport, 1869. No. 2 like to E. Spitzenberg; very promising.

JAMES COWHERD, Newport, 1869: medium, very acid. No. 5 probably good keeper: not fully ripe.

JAMES COWHERD, Newport, 1873. Committee thought favorably of seedlings exhibited and desired to see them when in season.

A. FORFAR, Scarboro', 1869: medium, yellow, fine grain, agreeable, promising, desert, fall, No. 1, not to be overlooked.

A. FORFAR, Scarboro', 1869: green, firm, rich, promising, winter. No. 3 to be looked after.

W. E. COLEMAN, Lyn, 1870: very large, red, sub-acid, promising, late fall. Worthy of trial.

Mr. ATTWOOD, London, 1870: large, colored like Ribston, flavored like Ribston, very good. Best brought to our notice; is it a Canadian seedling?

D. HAMMOND, Sheridan, 1870: handsome, mild. Worthy of trial.

D. HAMMOND, Sheridan, 1872: medium to large, crimson, fine grain, sub-acid, good, October. Tree very hardy.

D. HAMMOND, Sheridan, 1873: large, yellow-red, tender, sub-acid, very good. Well worthy of further notice.

J. W. JOHNSTON, Campbellford, 1872: medium, red, sub-acid. Tree 29 years, in bearing every year; hardy. $5 awarded.

W. L. STOTT, Markham, 1873: above medium, yellow-russet, fine grain, aromatic. Prize $10; worthy of extended cultivation.

Mr. STIBBARD and Mr. RUSSELL of London, Mr. COWHERD and Mr. GEORGE SMITH, of Brantford, in 1873, all exhibited seedlings which committee desired to see when in season.

D. NICOL, 1873: promising.

LEVI TURNEY, Colborne, 1873: large, first-class, baking. Tree over 70 years old.

CHARLES ARNOLD, Paris, 1874: $10 award for seedling. From Spy and Wagener.

CHARLES ARNOLD, Paris, 1879: fine size, crisp, table and cooking named Ontario.

P. C. DEMPSEY, Albury, 1874: above medium, sub-acid, very promising, named the Albury. Tree hardy, good and regular bearer; first prize.

P. C. DEMPSEY, Albury, 1874: full medium, fine grain, sub-acid, cooking, named Redner's seedling. Tree hardy, extremely productive, worthy of cultivation; first prize.

P. C. DEMPSEY, Albury, 1878: above average, red, aromatic, market, named the Hastings. Recommended for general cultivation; good crop every year.

P. C. DEMPSEY, Albury, 1880: large, greenish, firm, sub-acid. Possesses more merit than the majority of this class.

P. C. DEMPSEY, Albury, 1880: medium, green-yellow, sub-acid, high flavor, named Prenyea. Deserves to be widely disseminated.

P. C. DEMPSEY, Albury, 1881: dessert, October, named Prenyea. Said to be one of the best of its season in Prince Edward county.

P. C. DEMPSEY, Albury, 1881: large, green, cooking, mid-August, named Taylor Fish. An English apple.

P. C. DEMPSEY, Albury, 1881: medium, high, the Hastings. Reputed one of the best of its season for table and market.

P. C. DEMPSEY, Albury, 1882: Prenyea of Prince Edward county. Sweet. Lacks character to entitle it to general cultivation.

P. C. DEMPSEY, Albury, 1882: Hastings, local, tree hardy, suitable to cold districts, productive. Said to be a fine shipper.

P. C. DEMPSEY, Albury, 1882: Taylor Fish, at Cherrydale farm, Huron county, considered best large fall apple grown there, especially for cooking.

P. C. DEMPSEY, Albury, 1882: large, white-red, crisp, sub-acid, medium, August. Grand Sultan, foreign, large cropper.

P. C. DEMPSEY, Albury, 1882: red, sub-acid. Grand Duke Constantine, foreign.

GEO. PEACOCK, Mt. Salem, 1874: handsome, sweet, baking. Tree owned by Samuel Tedford, Gravesend, Elgin county.

DAVID BRADT, North Glanford, 1874: large, russet, good, promising. First prize.

DAVID BRADT, North Glanford, 1877: medium to large, russet. Shown as a late winter apple for the $50 prize. Committee on 7th February, 1877, in doubt and advise a committee to investigate.

E. BLAGDEN, 1874: handsome, good, fine. So like Spitzenberg, committee advise the tree be inspected when in fruit.

THOMAS CALDWELL, Dundas, 1874: very large, red. Resembles Blenheim; frozen; merits not ascertained.

JAS. CLARKE, Belleville, 1875: medium, yellow-red, crisp, sweet, fall. Prize $5; advise its wider cultivation.

A fine display: of seedlings, October 6th, 1875, 19 lots winter fruit, cannot now be passed upon. They came from Mr. WILSON, Whitby; J. GRAHAM and B. H. VANDEVOORT, of Sidney; H. J. LOTT, SAMUEL WIENER, Jordan; P. C. DEMPSEY, Albury; Messrs. COSNER, of Bay of Quinte, and Hon. LEWIS WALLBRIDGE, Belleville.

Mr. BELL, 1876: good, dark-red. Graft obtained from original tree about 20 miles north of Ottawa, Gatineau Belle.

A. T. GREGORY, Mt. Forest, 1875: January. Very fine, late fall, recommended for cultivation; if a seedling, worthy of a prize.

A. T. GREGORY, Mt. Forest, writes: See Report, 1876, page 49, that it is a seedling; tree early bearer; now 12 years old; requests inspection.

DANIEL B. HOOVER, Almira, 1876: medium. Tree standing on lot 34, concession 6, Markham; seed sown in 1813; very hardy.

DANIEL B. HOOVER, Almira, 1879: medium, red, fine, sub-acid, almost equal to snow, January. No. 1 recommended for cultivation; tree hardy, productive.

DANIEL B. HOOVER, Almira, 1879: large, coarse, fine, cooking. No. 2 tree 35 years old; hardy, productive; named by Mr. Hoover Lady Washington or Hoover's Favorite.

DANIEL B. HOOVER, Almira, 1882: medium, red, sub-acid, good, summer. No. 1.

DANIEL B. HOOVER, Almira, 1882: medium, yellow, pleasant, late fall to January. No. 2.

DANIEL B. HOOVER, Almira, 1882: below medium, red, crisp, sub-acid, winter. No. 3.

DANIEL B. HOOVER, Almira, 1882: large, red cheek, sub-acid, good to very good, winter. Hoover's Favorite; would ship well.

DANIEL WISMER, Jordan Station, 1877: large, handsome, tainted by cellar. $5 prize; he writes February 6th, 1877, tree bears every year.

WM. RUSSELL, London, 1877: Resembles Gravenstein, but past its prime. "London Beauty."

J. BURROWS, Drummondville, 1877: medium, green-yellow, sub-acid. Want to see it in season; now October 31st.

WM. ROY, Owen Sound, 1877: medium to large, handsome. Want to see it in season.

WM. BROWN, Sydenham, 1877: large, not ripe. Want to see it in season.

JOHN E. BULL, Weston, 1877: large, yellow, sub-acid, good to very good. No. 1.

JOHN E. BULL, Weston, 1877: yellow-carmine, fine grain, sub-acid, first-rate, fall. No. 2; prize $5.

JAMES CLARKE, Cannifton, 1877: large, striped, sub-acid, early winter. Recommended for trial.

SETH C. WILSON, Whitby, 1878: medium, good. Superior to Early Harvest for dessert.

T. C. WHEATLEY, Sarnia, 1878: medium, handsome, very late winter. Said to keep until April.

MAJOR ANDERSON'S, 1878: fair, yellow, good, fall. Commended.

STEAD'S SEEDLING, 1878: small, handsome red, good, table. Commended.

T. G. VIDAL, Sarnia, 1878: large, handsome crab No. 260. Highly commended.

A. HOOD, 1878: crab. Mr. Hood says fit to compete in flavor with any apple; ripe about Sept. 1st.

L. WOOLVERTON, Grimsby, 1879: above medium, yellow, bright, blush, crisp. Named Princess Louise.

WM. ROY, Owen Sound, 1879: heavy blush, pleasant. Gives promise of rating well.

SETH C. WILSON, Whitby, 1879: large, yellow-green, sub-acid, early September.

At meeting of February 9th, 1880, a committee on New Fruits was appointed. A. McD. Allan, Chairman.

J. H. RAMER, Markham, 1880: large; resembles Sweet Bough; out of season.

A. M. SMITH, 1880: green-blush, sweet, good, cooking, winter. Cannot decide it to be really a seedling.

GEO. COX, Goderich township, 1880: yellow blush; firm, tart, late winter.

DR. WATT, Niagara, 1880: russet, fine, pleasant, dessert. Past its season, February 19.

At Provincial Exhibition, 1880: medium, yellow red, fine, sub-acid, late fall. "Grimsby Beauty;" very handsome.

J. G. TENEYCKE, Grimsby, 1880: above medium, yellow green, fine, sweet, good, fall.

WM. ROY, Owen Sound, 1880: medium, good, dessert, fall.

WM. ROY, Owen Sound, 1880: winter, three varieties; desire to see these in season.

MR. MCCULLOUCH, Sault Ste. Marie, 1880: a number of seedlings of Fameuse, several very promising, all fall. None named or numbered; can't designate which seemed most valuable.

Provincial Exhibition, 1880: Pomme d'Or, too wild to merit place in a collection.

Provincial Exhibition, 1880: Fallawater seedling. No improvement on its very ordinary parent; quality inferior.

Report of 1881: Leslie crab, large, cream blush, sweet, preserving. Tree hardy, productive.

Report of 1881: Baxter's red, very large, red, cooking, winter. Ironclad; fine shipping apple; originated at Brockville.

Report of 1881: Cellini, large, green yellow, October. English; promising well.

W. W. AUSTIN, Oxford county, 1881: medium, russet, crisp, sub-acid, best, winter. Even form, as if turned in a lathe; would sell as high or higher in Europe than American Golden Russet.

Report of 1881: Cliff's Hawthornden, waxen, poor, as seen fall of '81 at Provincial Exhibition. Native of Prince Edward county; not desirable for extended cultivation.

Report of 1881: Princess Louise, medium, firmer than Fameuse, improvement on Fameuse, dessert. Should be brought into general cultivation.

Report of 1881: seedling of Spy No. 1, large, yellow green, sweet, pleasant, winter. Grown by Chas. Arnold, Paris.

Report of 1881: seedling of Spy No. 2, medium, russet red, firm, acid, pleasant, winter. Grown by Chas. Arnold, Paris.

S. FOWLER, Cambray, 1882: medium, two seedlings over-ripe, probably good cookers. January 18, '82.

O. F. SMITH, Glanford, 1882: medium, red, over-ripe. January 18, '82.

JOHN MCGILL, Oshawa, 1882: small, russet, good, May-June. Tree heavy bearer, No. 1.

JOHN MCGILL, Oshawa, 1882: large, green, medium, December-February. Tree hardy, No. 2.

JOHN MCGILL, Oshawa, 1882: large, russet blush, January-March. Tree very productive, No. 3.

JOHN MCGILL, Oshawa, 1882: medium, russet-green, May-July. Tree very productive, No. 4.

JOHN MCLEAN, Owen Sound, 1882: White-blush, sub-acid, fair, summer.

J. B. WALKER, Grimsby, 1882: medium, russet, medium, winter.

ALEX. ROBERTSON, Verulum township, 1882: green, sprightly, good, winter.

Mr. WIGGINTON, Goderich township, 1882: medium, crimson, fine, sprightly, good, fall.

Mr. SAUNDERS, Owen Sound, 1882: medium, yellow blush, fair to good. Fine shipper.

WM. BROWN, Owen Sound, 1882: above medium, russet, good, good keeper. Fine shipper.

WM. BROWN, Owen Sound, 1882: resembling Grimes' Golden, long keeper. Fruit of 1880 in fair condition in August, 1881.

Report of 1883: "Nonpareil," medium, yellow green and dull red, crisp, sub-acid, good, excellent keeper. Nova Scotia; largely grown there for the English market.

Report of 1883; "Nonpareil russet," small, crisp, fair. Nova Scotia; largely grown for the English market.

R. BRECON, Richmond Hill, 1883: No. 3, a russet, has character, poorly kept, may be of some value.

Report of 1884 mentions Salome and Belle de Boskoop as attracting some attention in United States.

Report of 1885: no report from New Fruits Committee.

1886: no report on new fruits.

1887:

1888: nothing on new fruits.

S. REANY, north Pt. Elgin, 1889: above medium, golden yellow, fine, sprightly vinous, very good to best, fall.

JAMES KEAN, four miles north of Orillia, 1889: below medium, crisp-fine, rich aromatic.

S. P. MORSE, Milton, 1889: tender, sub-acid, of early harvest.

T. C. ROBSON, Minden, 1889: above medium, yellow red, fine, pleasant, fair dessert, good cooking, October-November.

F. M. ROBERTSON, Minden, 1889: medium, 2⅝ x 2¾, yellow red, fine, crisp, sub-acid, not high, pleasant eating, good cooking, November.

B. WILLSON, Wingham, 1890: very large, yellow red, tender, pleasant, good, cooking, October.

The Haliburton, north of Peterborough, 1890: 2⅝ x 2½, yellow red, fine, acid, poor, end September.

R. W. SHEPPARD, jr., Montreal, 1890: larger than Fameuse, otherwise the same except in color. "Green Fameuse."

Mrs. RENAUD, Grenville, P.Q., 1890: large, green red, vinous, good, March-July. "Renaud."

J. P. COCKBURN, Gravenhurst, 1890: medium, red, fine, good, October. "McMillan," origin county Stormont, lat. 46° N.

R. BRODIE, Montreal, 1890: large 3¼ x 3⅛, red, coarse, sub-acid, good, end September. "Golden White," Russian.

G. G. HENDERSON, Hamilton, 1890: medium, pink and red, tender, aromatic, very good, winter.

F. W. COATE, Cape Elizabeth, 1890: medium, 2½ x 2½, yellow red, half fine, nearly sweet, probably good, too ripe. Berezinskoe Beresina, Russian, from F.G.A.

Mr. GREENFIELDS, received from Ottawa, 1891: below medium, green red, tender, sub-acid, possibly good, cooking, May-June. Quality poor, but scarcely ripe enough to be fairly judged.

Rev. R. LEWIS, Maitland, 1891: medium to large, crimson, tender, aromatic, very good, October-November.

D. NICOL, Cataraqui, 1891: "Mallory," resembling Fameuse, and of same season. Seems a good early market sort.

D. NICOL, Cataraqui, 1891: "Gibson," large, like Black Detroit in color and flavor. Might be profitable for near market.

D. NICOL, Cataraqui, 1891: large, highly colored, like Red Canada, more conical, lacking sprightliness, fine keeper and shipper.

D. NICOL, Cataraqui, 1891: "Parrot," medium red, good shipper, late. Unless tree is extra hardy not commended for propagation.

D. NICOL, Cataraqui, 1891: "Henderson," medium, early winter. Nothing striking in character.

C. B. RICE, 1891: "Oakland." A nice apple.

J. P. COCKBURN, Gravenhurst, 1891: small, poor, poor. Duchess x Snow.

THOS. BEALL, Lindsay, 1891: fair, yellow. Received 2nd prize at Dominion Convention of Fruit Growers.

P. C. DEMPSEY, 1891: medium to large, red, fair, late winter. Commended; No. 87; G. Russet x Spy.

P. C. DEMPSEY, 1891: small, red. No. 90.

T. H. RACE, 1892: large, red, good, good, fair keeper. Highly commended for propagation; grown Hibbert, South Perth.

S. C. WAIT, St. George, 1892: small, poor. Lacks size and quality for profitable market.

"Dery," Syn., Alexis Baldwin and Pomme de Fer. Received from J. L. Dery, Mt. St. Hilaire, P.Q., October, 1891-92; tree examined October 23, 1892.

W. H. MURPHY, Ottawa, 1893: "Calumet," medium to large, large, red, firm, sub-acid, good, March-April. From seed of American Baldwin planted seventy years ago; bears moderate annual crops.

W. H. MURPHY, Ottawa, 1893: "Calumet," medium to large, 3¼ x 2½, yellow red, firm, sub-acid, good, all winter. From seed of American Baldwin planted seventy years ago; bears moderate annual crops.

Prof. CRAIG: The chairman of this Committee has been to a great deal of trouble in looking up a number of new fruits that have been exhibited before this Association for the last twenty years, and his report will show that we have had from time to time a great many new fruits exhibited, some of small value no doubt, but others probably of a great deal of value. These have been lost sight of from year to year. Now, I think that the recommendations that the chairman of the committee makes at the end of his report should have some action taken thereon, and I would move "That the chairman of this committee be authorized to correspond with exhibitors of seedling apples which have been reported favorably upon by the fruit committees of the Association from year to year, with a view of obtaining further information in all cases, and scions for testing where deemed advisable; and further that the chairman of this Committee be appointed a permanent officer of the Association, at a salary commensurate with the amount of labor involved." As a means to facilitate the work I would say that these scions which might be obtained by this chairman might be sent to me at Ottawa, and I would engage to propagate a sufficient number in each case to distribute to the trial experiment stations working in connection with the Association. That would give us an opportunity of getting at the values of these fruits, and at least would enable us not to lose sight of the varieties here exhibited from year to year, and also encourage the originators of new varieties to bring them before the Association.

Mr. A. H. PETTIT: I have pleasure in seconding the motion.

Mr. MORTON: I would like to know what you mean by the chairman of the committee being appointed a permanent official? As I understand it now, we have a standing committee upon New Fruits. Do I understand that an individual be appointed, or that an officer be appointed permanently? If the officer is to be appointed permanently—and in whatever remarks I make I am not to be understood as speaking against the chairman of the present committee—if it is proposed that an individual shall be appointed permanently I decidedly object to it on principle. In this institution we have no person appointed for longer than year to year. If that is the construction that is placed upon that I decidedly object to any individual, I don't care who he is, being appointed permanently. He should be appointed from year to year. If on the other hand you mean that this officer should be appointed permanently I think it is already covered. We have a standing committee appointed, and that must necessarily be permanent until it is changed; but it means that the whole three members of the committee are permanent officers of the organization; and if it is thought that instead of having a committee of three there should be one, it seems to me the motion should be in the direction of limiting that committee to one.

Mr. WHITE: It seems to me the essence of the motion is that the chairman of the committee should be a paid official and that the work is greater than should be done by any individual without remuneration.

Mr. A. H. PETTIT: Our committee meet to examine new fruits year after year, and they bring in a report. That report is brought in to-day taking up a whole series of years; and those fruits, many of them, are lost sight of entirely. We might direct that these specimens be further tested at our experiment stations, and if we have a fruit that is worth cultivation we have the assurance that it will be cultivated and disseminated throughout the province.

Prof. CRAIG: In answer to Mr. Morton I may say the resolution referred to the office.

Mr. MORTON: If you think the chairman should be paid, then you should omit all reference to his being a permanent official, and direct that he should be paid according to the decision of the directors.

Prof. CRAIG: I think Mr. Morton's views are quite reasonable. I will amend by saying that the chairman of this committee be appointed from year to year instead of being a permanent officer.

Mr. MORTON: I would think this would cover the ground, "That the chairman of this committee be paid such salary as the directors may approve."

Mr. MCNEILL: There is still another feature of it. Without appearing dogmatic at all, I think there is a precedent here that may be established—that we need to carefully consider before establishing it. There is some objection to expending money except in the most judicious circumstances. Is it wise to furnish the society with another paid officer? The Secretary is paid; I think that is the only paid officer in the association. Am I right?

The PRESIDENT: Yes.

Mr. MCNEILL: It is a very dangerous thing to introduce the principle. It is doubtful whether the precedent is not a dangerous one. I am in favor of paying well any man we do pay for his services, because it is understood he gives his whole time to the work, and the pay must be commensurate with the ability displayed; but where people give their time to it, not expecting remuneration, it is a very dangerous thing to introduce any principle of paying a certain individual because he gives a little more time than another. The same question comes up with payment of singers in choirs. By introducing the principle of paying the first soprano, we have had to pay the first bass, then others applied and we have had to dismiss the whole of them.

The SECRETARY: I have not heard the discussion and am not fully conversant with the points, yet there is one feature that we might consider. It is this, that we have already started out upon a new venture, and that is the experiment station work. Now, in each of these stations there is an experimenter who is to receive all new fruits, plants of all new varieties, and test them thoroughly, and every year report upon those, what they are worth in his vicinity, and how the plants and trees grow, whether they are vigorous or not, and whether adapted to that locality, and so on; and I just simply throw out this for your consideration, will not the reports of these various experimenters —we will have ten of them—cover the identical ground which you are proposing now to be taken up by this new official? I had an idea they would.

Mr. A. H. PETTIT: That is the very point on which I seconded the motion—that we shall have some authority to make the decision that a certain new fruit that he has found is worthy to be recommended to those men for cultivation. They might propagate hundreds of plants that would be of no value. We don't want the time wasted, but if it is worthy to be cultivated, the recommendation then will come from the chairman on new fruits for that purpose.

The SECRETARY: Of course the experimenter will test all new plants of every promising variety that comes up.

The PRESIDENT: This plan would be a feeder to the experiment stations.

Mr. MORTON: If that is the decision, we have nothing to do with it. The Government has seen fit to establish experiment stations and they ought to pay the cost of them, and we ought not to be burdened. It is true that we have something to do with it, but we are not responsible for that—we are simply as it were in affiliation—we are the report body upon the board of control; and if this person is to supplement the work of the board of control, then I say that the board of control should be the ones who should appoint that officer and make provision therefor. I think if this Association in their discretion wish this report on new fruits to be continued, it is unjust to ask the preparation of it without remuneration, and I for one would be totally averse to having an individual give so much of his time as must have been given for the production of that report without a certain amount of remuneration.

The PRESIDENT: I think Mr. Morton is wrong in one respect. If the Government sustains these experiment stations, we have a perfect right to provide them with the plants and recommend those plants. Why throw the whole thing on the Government? They have just got to go to work and hunt up those plants themselves. Now, it is proposed that this committee be a feeder to the experiment stations.

Mr. MORTON: You find in the constitution here how plants are to be given to them.

Mr. PETTIT: The Committee is appointed to-day on new fruits, and they make their report. Their report is quite favorable on three or four varieties, we will say. What are you going to do with it? If this committee consists of one person he could give more time and attention to it than a number of persons changed each year. It would be a guard to our experiment stations to have the fruits recommended by him for testing instead of the stations testing hundreds of things that are of no use.

The motion was put and as amended was carried.

REPORT OF NOMINATING COMMITTEE.

Mr. SMITH read the report of the Nominating Committee. The names of officers elected will be found on page 2.

The new President, Mr. M. PETTIT, was escorted to the chair and said: Gentlemen, I thank you for the honor you have done me to-day in electing me as your President. I little though twenty years ago or more, when I became a member of this association, that I would ever be called upon to fill this honorable position, and I assure you I shall put forth every effort to advance the interests of the fruit growers of this province, and in attempting to do so I kindly ask the co-operation of the officers and members of this Association. (Applause.)

Mr. RACE: You see now I cannot deliver the President's address—(laughter)—but I will have to deliver my address as the ex-president of the Association.

(The address appears on page 3.)

Mr. MCNEILL: Will you allow me the pleasure of moving a vote of thanks to our retiring President Whether it is a usual thing or not I think a special vote of thanks is due him. He has filled the office not only with credit to himself, but with honor to the Association, and it would be a great mistake indeed to allow Mr. Race to retire without recognizing in some manner the ability with which he has performed his duties in the chair.

Mr. TURNER seconded the motion, which was carried amid applause. The vote was tendered to Mr. Race.

Mr. RACE: I assure you I appreciate very highly this expression that you have given. I retire from the position with a great deal of pleasure, because when I took it I felt I was not doing justice to the Association, as I didn't think that I was sufficiently interested financially in the results of the Association to warrant me assuming such a position. I have believed that these positions should be occupied more by men who are actually engaged in fruit growing, and putting me in the position while I was not actually engaged in fruit growing was something of an innovation; but if I have contributed anything to the interest and profit and success of the Association, I assure you I am very much pleased to know that I have done so. My intercourse with the members of the Association has been very pleasant and I shall never forget it, and I would not like to be cast out of it; and my influence, sympathy and hearty co-operation is with you as long as you will find me in the flesh, though I have not very much flesh to be in. (Laughter and applause.)

Mr. D. W. BEADLE moved the following resolution as to the death of David Nicol, which was seconded by Mr. Beall, and carried by a rising vote:

Resolved, That this Association desires to put on record its sense of the great loss which has been sustained not only by the Association, but by the entire province by reason of the sudden demise of the Director for the 3rd Division, Mr. David

Nicol, of Cataraqui. Chosen director in 1889, he brought to the F. G. A. of Ontario the benefit of his experience of many years as a fruit grower and horticulturist in the peculiar climatic conditions of that division, and won the esteem of all by his wise counsels and deep interest in every effort to advance the prosperity of our country. Honorable, upright and courteous in all his intercourse, we deeply mourn his sudden death, and tender to his bereaved family our deepest sympathy.

Mr. MORTON reported from the committee appointed to examine the Secretary's report on the Distribution of Fruits, recommending that the report be adopted.

C. W. HARTMAN (Clarksburg) read Mr. Mitchell's paper, that gentleman having been detained by sickness in his family.

FRUIT GROWING IN THE BEAVER VALLEY.

By Mr. JOHN MITCHELL, CLARKSBURG.

For the benefit of those who have never seen it, I will first endeavor to give a brief description of the "Beaver Valley."

It begins at Thornbury on the south shore of the Georgian Bay, and extends southwest for about twenty miles to Eugenia Falls, and is drained by the Beaver River. It has an area of about 280 square miles, of very fertile land. The scenery throughout the whole length of the valley is most magnificent.

Imagine yourself upon one of the lofty hills overlooking the beautiful farms, with orchards and fields of waving grain stretching out across the valley and up the mountain slopes as far as the eye can reach, with the towns of Thornbury and Clarksburg and the blue water of the Georgian Bay spread out before you as if it were almost at your feet. Such is a summer scene in the Beaver Valley.

It is admirably protected on the east and south by the Blue Mountains, and on the west and northwest by a chain of lofty hills almost as high as the mountains themselves, thus giving it a decided advantage as a fruit-growing district over many sections further to the south. Fruit growing has already attained a prominent place. Thousands of young trees are being set out and in the near future there will be a very large export trade in winter apples. Already two large apple houses have been erected at Thornbury where thousands of barrels of the best varieties of winter apples are stored, graded and repacked, each variety being shipped out in its proper season for use. Nowhere, perhaps, do such varieties as Spys, Baldwin, Ben Davis, Golden Russets, and Kings attain such perfection in quality and quantity as here. I have seen sixteen barrels of fine Baldwins taken off of a single tree owned by Mr. S. Webb, of Thornbury.

Also, such fall varieties as Ribston Pippins, Blenheim, Orange, Gravenstein, St. Lawrence, Twenty-ounce, and in fact almost all kinds of apples do remarkably well.

But if there is one kind of fruit in which the valley excels in more than another, it is the plum. This might be called the home of the plum. All of the best varieties that have been tested grow and bear to the greatest perfection, but on account of its early bearing and great productiveness the Lombard is considered the most profitable. Indeed, I have seen growing trees planted four and five years loaded until their branches touched the ground with fine, clean, large well-colored fruit.

Cherries grow as well as plums. but have not been so extensively planted.

Black knot is regarded as a fungous disease. It made its appearance here some years ago, but owing to the prompt and vigorous measures taken by the local municipal councils it has been kept under control and gives very little trouble.

Pears have not received much attention as yet, but some of the hardy varieties, such as the "Flemish Beauty," bear heavy crops of fine, large, clean fruit.

Small fruits of all kinds do remarkably well but are grown principally for home use.

Such varieties of grapes as Niagara, Brighton, Salem, Moore's Early, Moore's Diamond, Concord, Delaware, and others, winter on the trellis.

Peaches have not been grown for market as yet, although there are quite a number of trees scattered throughout the district, and some fine plates of Alexander and Crawford were on the table at the Clarksburg Exhibition this fall. The yield also is good, twenty baskets having been taken from a five-year-old tree in the village of Clarksburg this season.

In conclusion, I would say that the Beaver Valley is progressing rapidly, and in the near future will have an enviable reputation as a fruit-growing centre.

Mr. C. W. HARTMAN, of Clarksburg, who read the papar, added:

There are a few things that I might add to the paper sent by Mr. Mitchell, relative to the Beaver Valley, which has received some attention from fruit growers lately. There may be some persons who intend engaging in fruit growing, and who would like to visit the locality and investigate its advantages for themselves. The most direct way for most people will be to go to Collingwood; everybody knows where Collingwood is situated, it is the most enterprising town, with the exception of Orillia, in the province. It has had its meeting of the Fruit Growers' Association, it also has the largest meat curing establishment in Canada, and possesses a peculiar charm for lady newspaper correspondents in its wealthy, good-natured old bachelor mayor. The Blue mountains are quite close to Collingwood; they are an extension of the Burlington heights, and while Collingwood lies to the east of this range, the Beaver Valley is situated on the west side. Travelling west from Collingwood along the shore of the Georgian Bay for fourteen miles, you come to the town of Thornbury, which is situated at the mouth of the Beaver River, and on the G. T. R., turning to the south as far as the eye can reach is what is known as the Beaver Valley. It extends some twenty-five miles inland and terminates at Eugenia Falls. The tract of land along the course of the Beaver River west of the Blue mountains and east of the high range of hills on the west side of the valley comprises about 300 square miles, most of which is suitable for fruit growing, but some parts are much better adapted for certain fruits than others in the same district. The Beaver River rises in the township of Osprey, near Rob Roy, some thirty miles by winding ways from where it empties into the Georgian Bay. It passes through the busy village of Feversham, supplying the Patrons of Industry with abundant water power for their successful co-operative flour mills, then some five or six miles west it comes to the world-renowned Eugenia Falls, where it drops some 300 feet within the short space of half a mile into the Beaver Valley proper, then on a northerly course between the ranges before mentioned, passing the flourishing villages of Kimberly and Heathcote, it comes to Clarksburg and Thornbury, situated near its mouth, both busy places with large mills and factories supplied with power from this stream. Thirty years ago this valley was almost a virgin forest, but its earliest settlers believed in the possibilities of fruit growing here and planted out many orchards, fortunately the greater part with first-class winter fruit, and for the past few years over 50,000 barrels of winter apples have been shipped out of the valley yearly.

Principal Grant, in his splendid work entitled "Picturesque Canada," on page 574, speaking of the Beaver Valley, says that it is said to possess the finest climate, and to be without exception the finest peach growing district in Canada. I do not know where this information was obtained so long ago, but if it is correct that the further north that fruit of any kind can be grown to perfection the better the quality, then I can endorse the statement of that distinguished writer, and believe that peaches can be raised with profit on a large scale in the Beaver Valley; but I have hadmore experience in other fruits, particularly plums, and from observation, believe that with the same attention, a good plum orchard will be quite as profitable here as the orange groves in southern California.

It has often been asked lately why this particular valley is so well adapted for fruit. Some more experienced fruit grower may be better able to explain, but I imagine that its close proximity to the large sheet of water of the Georgian Bay, and the fact that the valley opens to the north has something to do with its fruit crop and freedom from disease. Possibly the river, fed as it is with springs flowing its entire length, may have

a beneficial effect, and the two keep the air cool in the early spring, preventing the fruit buds from opening until all danger of frost is over; the same bracing atmosphere may prevent the fungus affecting the foliage as it does in more southern localities.

Now, although I have no fruit lands of my own to dispose of, I am frequently asked questions about the profits of fruit farming in this district, and the facilities for shipping perishable fruit to market. We have at present the Crand Trunk Railway at the north end of the valley and the Canadian Pacific Railway at the south, some five or six miles from Eugenia. Both of these lines connect with Toronto and Montreal and other good markets in fast time and at reasonable freight rates. It is also more than probable that before long an electric railway will run through the valley, connecting the Georgian Bay with Durham or Mount Forest, thus giving a more direct route to Buffalo, which is always a good market for small fruits. A charter for a railway along a similar route has been granted, but the expense of operating an electric line is much less, and sufficient power is wasted at Eugenia Falls and along the Beaver River to not only operate a railway of that extent, but also to turn every threshing machine, cutting box, churn and sewing machine in the valley, as well as light and heat the houses along the line.

These, Mr. President, are some matters to be considered in connection with fruit growing in the Beaver Valley, that I have strung together on very short notice. With an agreeable climate, good shipping facilities, we only require to develop electricity to a point that it will kill the curculio, destroy black knot, pick and market the fruit, and the happy possessor of the fruit farm will have nothing to do but touch the button.

Mr. DEMPSEY: I would like to know if pear growing is carried on there?

Mr. HARTMAN: Not extensively. It has been carried on with some success, and on the higher lands and the heavier soil it does better than in the valley. We suffered some ten years ago with a blight that affected the pears in all parts, and at that time the pear orchards were only set out—not very extensively either,—but the plum is the most profitable fruit that we have raised there yet.

Mr. FISHER: What quantity of plum trees are planted there, and how long have they been planted, and what is your export?

Mr. HARTMAN: Our export from Thornbury Station alone amounts to a carload every day for about three weeks during the season, in baskets. That is just the plums alone. That is the output of the Beaver Valley.

Mr. FISHER: How many trees are planted and how many in bearing?

Mr. HARTMAN: I cannot give you the acreage, but there are a great many acres of plum orchards throughout there; I should say there are one hundred acres. Nearly every farmer has half an acre, and some have ten acres. I have sixteen trees that I keep count of, and one year after another they will average $5 a tree profit. I have some 500 altogether.

The SECRETARY: What struck me on my visit there was the peculiar adaptation of the climate and soil of that valley to fruit and especially to plum growing. I never saw them succeed any better, not even in the Niagara district.

Mr. FISHER: Plum trees will stand 200 on an acre, and $5 a tree means $1,000, which is better than grapes.

Mr. HARTMAN; Those are sixteen trees that I have given special care to, and under the most favorable circumstances.

DELEGATE: What is the variety?

Mr. HARTMAN: There is the Washington and the Imperial Gage, which is a shy bearer. There is also a large plum, almost as large as the Washington, I don't know the name. Then we have the Victoria and the Lombard.

Mr. ORR: Does the Georgian Bay freeze over?

Mr. HARTMAN: Yes.

Mr. ORR: Did you ever try the Yellow Egg?

Mr. HARTMAN: Yes; and they do well.

Mr. PETTIT: Where is your chief market?

Mr. HARTMAN: We ship to Toronto principally.

Mr. PETTIT: When you speak of carloads do you mean full cars?

Mr. HARTMAN: I mean all they can put into the express car; they don't have a special car. I got that information from the express agent.

Mr. JAMES: What is the land worth in that valley?

Mr. HARTMAN: It varies from $30 to $50 an acre.

A DELEGATE: What do you find the best variety?

Mr. HARTMAN: The Lombard is the most profitable we have had.

Mr. CASTON: I find they are growing the German Prune a good deal?

Mr. HARTMAN: Yes; the last few years.

Mr. CASTON: It is fairly good for canning too?

Mr. HARTMAN: Yes; we have them shipped as far as British Columbia.

Mr. CASTON: Do you have grapes?

Mr. HARTMAN: Yes; Niagaras. The grapes are not grown there for export at all.

Mr. MCNEILL: Do they stand on the trellis during the winter?

Mr. HARTMAN: Yes; I have covered some, but the last few years I let them stand up. Of course the Concord is all right.

Hon. C. DRURY: Mr. Gaymon, a lawyer in Collingwood, succeeded in raising a hardy peach tree. I was at that time director for this district on this Board, and I reported the fact to the Association. I think he honored me by giving it my name, and I have strong suspicions that that had something to do with the fact that it has, I believe, become extinct. (Laughter.) But I have been told, and learned from various sources, that peaches will grow in the neighborhood of Collingwood. (A voice,—"Yes, that is true.") If that is true it is a fact that ought to be noted, especially as you are considering the Beaver Valley.

Mr. HARTMAN: We have had considerable experience in a small way in peach growing. The Early Crawford ripens very well. The next year after that severe winter that we had some ten years ago, we had no peaches; the next year some of them were killed; but we had some peaches from the village of Clarksburg, exhibited at the World's Fair last year. This year there were twenty baskets of ripe fruit taken off one tree, and the tree is quite healthy; and I believe there are protected parts on the Beaver Valley where peach growing can be done to considerable advantage and profit. I think the Early Crawford peach can do very well there.

Mr. SMITH: Do I understand you to say there were twenty baskets of Crawfords off one tree?

Mr. HARTMAN: Off one tree; the baskets were plum baskets.

Mr. SMITH: I think our Niagara growers will have to take a back seat.

Mr. HARTMAN: I am not giving that as an average, but as just one sample.

Mr. W. G. ANDREWS, foreman for Dr. Aylesworth, said: In regard to the peach growing, you can rely on the reports Mr. Hartman gave. We grow peaches there to great perfection. Our next neighbor, Mr. Cox, has now seven fine trees bearing peaches every year, and we have been growing them this last three years from some two hundred small trees. Some of them are dead on account of the wet ground there, but the peaches can be raised there of the very best quality and with very little care. There is very great difference in the climate within a very few miles. We have a farm only five miles out of Collingwood, and during all the winter long the thermometer

would vary 10 degrees between our place and the village of Collingwood; and it is the same thing in Beaver Valley and the village of Thornbury. We grow pears to great advantage. Some Flemish Beauty we have had weigh 16 ounces. These large apples Dr. Aylesworth speaks of; I sorted out twelve Northern Spys weighing from nineteen and a half to nineteen and three-quarters ounces apiece. We have some six or seven hundred large apple trees that we expect this coming year 1,200 to 1,500 barrels of apples from. One great difficulty we find is the taking care of the fruit after it leaves our hands in shipping it. This year we shipped our apples to Winnipeg, and we had them graded into three grades and put up very nicely, but some of the best we put up were some of the worst when they got there on account of the rough handling in the transhipping at Owen Sound and Port Arthur. Barrels on the car and some times on the boat are piled up three tier high on end, and at other times piled on their side, and they are broken down; they pull down the bottom barrel and let the others come down with a crash, and the apples are damaged from one end of the barrel to the other; that is our great trouble.

Mr. McNeill: I think one of the most important questions that can come up is the handling of fruit, and I believe the best results will not be got unless by some concerted action. I believe that the transportation companies are only too anxious if they are backed up by the fruit growers to see that this fruit is properly handled. I have followed my own consignments of fruit, and I find the transportation company is perfectly willing to rectify any evils in shipping that can be traced directly to their men, and the express companies have reimbursed me, and through me my customers, for rough handling simply. I have now two cases pending of rough handling. I make a point to investigate every case, and let the companies know that if there is any rough handling or any baskets tampered with, they are just as certain to be followed by me as they are by death. I secured the discharge of one messenger from the Canadian Express Company simply for rough handling. We were in a great hurry, and I found him standing at the door of the car, and throwing grapes in across the full length of the car. I remonstrated with him, and he said, "You don't know anything about it." I said, "You will know more about it before I get through with you"—so I took the job out of his hands, and he attempted to put his hands on me, and he called the agent, who, seeing I was in earnest, let me pile that car myself. I made a complaint to the officers of the company, and I had the satisfaction of knowing that that messenger was discharged. We are to blame ourselves to a large extent. I think that both express and railway men should help us in this matter. Goods sent by express go to their destination worse than goods sent by freight, and boat men apparently are worse than every other, as far as my experience goes. My suggestion is that, as far as this association can possibly do it, we should instruct shippers of fruit to follow every consignment, and follow any destruction by rough handling with letters and inquiries and investigations until they make it so tiresome for those messengers and the deck hands and others who handle this that the companies will employ none but careful men.

Mr. Andrews: We find that the fruit gets a great deal more rough handling in shipping west than in shipping east. The Canadian Pacific Railway, seem to have had all their own way in goods going to the west, and it is a very hard matter to do anything at all with them. There is competition eastward, and hence less trouble.

The President: This question of rough handling of fruit is one that has been discussed a great deal in the past and is a very important one, and I don't know but the remedy lies in this way of following it up as vigorously as Mr. McNeill did.

NOTES ON STRAWBERRY GROWING.

W. W. Hilborn, Leamington, said: I am often asked the question "What is the best method of cultivating strawberries?" To answer that question we must know the conditions in which they are to be grown. The strawberry plant requires about the same in all parts of the country. It does not matter where you have the plant, the

requirements are about the same. The conditions vary so in the different parts of the country that we have to vary the cultivation to suit the conditions and to get these requirements. It is therefore impossible to give any directions that will be useful in all parts of the country. On general principles the strawberry plant wants a nice, mellow, loose soil with plenty of moisture but not too much water; water not too near the surface. It won't stand wet feet, it being a small plant and with just, I might say, a crown and some fibrous roots and small top which is easily affected by the changes of the weather. Even although we have favorable weather previously, a few dry days at ripening time will lessen the crop one-half and sometimes more; so that what we want to get at is to regulate the moisture. We may have never so good a soil, give the plant all the manures, commercial or otherwise, that we have a mind to, but if we cannot regulate the moisture our crop will be a failure or a partial failure. The strawberry is made of about 80 per cent. of water. The plan I usually adopt for cultivating is to plant in rows four feet apart and about a foot to one and a half or two feet apart in the row according to the variety. Some varieties grow stronger than others. I plant as early in the spring as possible. If the soil is a clay loam, it should be prepared in the fall by plowing and throwing up to the atmosphere. If it is a sandy loam it would require to be plowed and worked in the spring and thoroughly prepared. I plant by using a spade. In the first place mark off in rows with a corn marker four feet apart, and have one man to set down the spade and give it a pry one side, and a man follow and put in the plants, pressing the soil very firmly, having the top of the plant to come about level with the surface of the soil.

Mr. BOULTER: You prefer that plan to putting it in by hand?

Mr. HILBORN: It is putting it in by hand. You make only an opening by spade and put the plant in, and press it in firmly with your hands. If the weather is right, if you have just nice growing season right through, it might answer to use spuds to press the earth, but if it is not right it won't answer. Many of the plants may not show failure for a month, but during the season they will fail. I open the place with a spade so as to admit the roots to go straight down and spread out in fan shape as you go down, and press it with the fingers, and press it so firm that you could jerk off a leaf without moving the plant; then they will come through all right. After planting we start cultivating at once. There's where one great mistake is made with most cultivators. After the plant is in they think the job is done for some time, and perhaps when they come back again they find the weeds up some two or three inches high. It is not right. As soon as the weeds sprout is the time to kill them. One half the work at that time will be more good than double will later on. If the season should be dry this cultivation is a very important matter and should not be lost sight of. Many people think that when the weeds do not grow cultivation is not necessary. If there is plenty of rain to keep the plants growing, and there are no weeds growing, then the cultivation is not a serious matter; but if there are weeds growing or if the weather is dry, it is a consideration. We can keep moisture in the driest season if we manage the cultivation properly, and I think that that cultivation is the most important point to watch in the growing of fruits. Now, during the last few years we have been troubled, especially in our section, with drouth during most of the summer. Well, if we neglect this cultivation in the early part of the summer, all the extra cultivation that we can give later on won't make up for it. We must hold the moisture while we have got it, for the weather is very dry and hot and of course the evaporation is going on very rapidly. Well, if it is allowed to form a crust only for three or four days, the evaporation comes to the top and of course escapes. The dryer the weather the oftener we should cultivate, even to every other day or at least twice a week for small stuff. That gives us a loose mulch top soil and presents evaporation. Cultivation cools off the soil and causes dews to be deposited at night down into the soil and gives us moisture in that way. A very good plan is to cultivate in the morning before that moisture has evaporated again. You will save a little in that way. Now that we have got the plant started to grow, I always cut off all blossoms and all runners of the newly set plants. If the plant has grown sufficient to send out about four or five runners at once then I let them go in the form of a matted row. We all know that in planting a row of

strawberries sometimes runners will run out this way and sometimes another way—sometimes ahead and sometimes back By watching that we can have all the runners go the one way, and it makes quite a difference afterwards and in the appearance of the rows Every plant in is a sort of runners hape. The runner runs out here, sends out another runner and goes on. From this side from which the runner starts out, that side of the plant will always send out the runners for the following season, or when it begins to grow as the case may be, and in planting put them in on that side and your runners will always run on that side and it will save you a great deal of trouble. It does not disturb the plant and it grows much better. I have found it is better to keep the row rather narrow in most soils; in cultivating keep it down to perhaps a foot in width.

Mr. BOULTER: That is pretty narrow.

Mr. HILBORN: It is pretty narrow, but if the soil is good it is all right.

Mr. BOULTER: And four feet apart?

Mr. HILBORN: Four feet apart. When you come to pick you will find there is just barely room for the pickers to get in there without tramping the vines; but if you have it wider and it should be a wet season the berries get very soft and I don't know that you get any more fruit, because by mussing the vines in picking you injure them, so that they don't perfect nearly all the fruit that sets; while if it is narrow the plants are not injured so much and they are brought to better perfection, and I think yoe get more for it of better quality and certainly more firm, which is quite a consideration in strawberries. In the fall as soon as the ground freezes two or three inches deep we like to mulch them with any coarse material, coarse straw or anything that we can get that will not lay down too compactly, and put most of the mulch between the rows, but very little directly over the plant, just enough to barely cover them from sight. It is safer on general principles to mulch, although in our locality we find sometimes that those that are not mulched give out just as well as those that are. I usually recommended a renewal system. Plant one spring; take off the crop the following, and where you have planted on land take off perhaps a catch crop the second year; but plant your new plantation for spring and depend upon that.

Mr. BOULTER: It is the safest.

Mr. HILBORN: It is the safest, and I have found in our high, dry, sandy soil that especially when we have those dry seasons and old bed that has been out perhaps two or three years will give a better yield of fruit than a new plantation that you have taken the greatest care of.

Mr. BOULTER: I know that from experience. I paid a man $1,000 for what strawberries he brought me off three acres in the second year, and he didn't put an hour's cultivation on them, but he just happened to strike the right year; however, that is not good policy to follow out.

Mr. HILBORN: No, but there are cases of that kind. Among the many varieties I have tested I have selected about a dozen that seem to stand at the head just now; but I might say that it is very hard to come down to varieties, because what will do well with me or my cultivation may not answer so well with my neighbor not three miles away from me. But there is this one thing that might be borne in mind, and one that will go to show the value of our experiment stations—there are hundreds of varieties of plants sent out throughout the country, and I will say that I myself have tested about two hundred varieties of strawberries—we can get these varieties together at these stations, and test them and simmer them down to a few or to a dozen varieties; then that few we can have more generally tested throughout the country at very little expense, and we can safely pick out these few and say: Those have sufficient merit to give them a trial, while the balance of this hundred or two hundred varieties would not be worth testing in a general way. Well, I have simmered them down to about this: Bubach No. 5, Crescent, Wilson, Williams, Beder Wood, Woolverton, Saunders, Lovett, Parker Earl, Captain Jack, Gov. Hoard, Warfield No. 2.

A DELEGATE: Is that in their order of quality?

Mr. HILBORN: That is about in their order of value.

Mr. BOULTER: Why do you put Crescent second?—because it is large, luscious looking, better yield? Does it bring the money?

Mr. HILBORN: Because in most parts of the country the Crescent will yield $2 worth of fruit to one of Wilson. In my own place I would rather plant the Wilson by far in preference.

Mr. CASTON: Don't you find the Bubach makes very few plants?

Mr. HILBORN: Not with me; it makes sufficient plants. The Wilson makes a good fertilizer for the Bubach or the Crescent. In gathering, the berries should be gathered separately. We plant usually either two rows to fertilize with, or four rows. Of the pistillate variety we usually put in four rows, and two rows of some staminate to fertilize it, and generally we get the best yields from the pistillate variety.

Mr. CASTON: What one did you put after Wilson?

Mr. HILBORN: Williams, I think, but it varies a good deal and I am not sure that it will stay there. Anything that I give you this year I wish to be allowed to change another year or at any future time in regard to varieties, because it seems impossible to find varieties that remain constant. They will exhibit some weakness in a year or two that we have not seen before.

Mr. CASTON: What do you think of the Woolverton?

Mr. HILBORN: The Woolverton has succeeded very well with me. It is very large, fine quality, and firm for such a large berry, and certainly of the finest appearance of any of the large berries.

Mr. CASTON: Is it going to be firm enough for shipping?

Mr. HILBORN: I think so. It will ship to quite a distance, I think as far as any of the large berries.

Prof. HUTT: What do you think of fall planting?

Mr. HILBORN: I would not recommend it at all; not that it cannot be done, but nine times out of ten it will prove a failure to the plant, for the reason that the strawberry is such a small plant that if we don't have a favorable season it does not get sufficient hold to stand the winter; it is easily heaved out and there is nothing gained by it. Except you wanted to cultivate a new variety it does not pay to fall plant If you plant in the fall under ordinary circumstances, you have, we will say, half as much cultivation to put on that plantation as you would if you planted in the spring, or one-third as much at any rate, and the following spring under ordinary circumstances you get but a very small return of fruit; and if the plants are not mulched they won't amount to much because they are just a narrow, small row—they haven't spread out enough to amount to anything and you cannot expect much fruit from them, because the plants are not there to produce it. The plants are liable to heave out, and if they do, there is all that labor and you get no cultivation; whereas if you plant in the spring you get a fall crop the following season, and not so much difference in cost as the difference in profit would warrant.

A DELEGATE: What cultivation would you give it the second year?

Mr. HILBORN: That would just depend. It sometimes happens that a plantation is in such a condition the second year that you can give them the kind of cultivation you would like to, and you have got to vary that to suit. Sometimes I found it was best after the first crop was picked, if they had been mulched, to take off the mulch—either to burn it or rake it off—and then plow between the rows after laying down the tops; but if the weather is very dry and hot and the soil dried out, that is not a very good treatment. Work it both ways with a harrow and tear out all the plants you can; but if the weather is dry you cannot give them that treatment. Sometimes you have to let them go for some time until you get a rain, and you must watch the weather, and if it is

a little late in the season I would not advise the plow—I would just go in with the cultivator and work up the soil the best I could with that, and even clean out with the hand-hoe or whatever way you can do it most quickly and cheapest.

A DELEGATE: Do you ever give a cultivation in the spring?

Mr. HILBORN: I do sometimes. In case I don't mulch I start the cultivator as soon as the weather is suitable in the spring, and on our light soils in dry seasons I think you can keep up the moisture even better that way than you can with the mulch.

Mr. CASTON: Cultivate right up to fruiting time?

Mr. HILBORN: Right up to fruiting time.

Mr. TURNER: When you are fixing up the beds the second year, don't you consider the plants you leave in are in the same condition as a fall-planted bed?

Mr. HILBORN: Yes, but new plants certainly give the best results, and in cutting out, where you can do it, if the plant runs sufficiently, I would leave the new row where the new plants are and cut out where the old plants come as near as you can.

Mr. TURNER: Then why wouldn't fall-planted plants do?

Mr. HILBORN: I wouldn't recommend fall planting, because you cannot get a stand of plants sufficient for a crop the following spring. It can be done on a small scale, and for family use I would recommend it every time if a man has no strawberries, by all means to plant in the fall rather than to wait for another year.

Mr. CASTON: I always recommend that if we can get sufficient moisture in September, to plant by all means in the fall.

Mr. HILBORN: What do you gain by it?

Mr. CASTON: The plants are farther ahead for the next season.

Mr. HILBORN: We can get all the matted row we require in the next season.

A DELEGATE: If you get a good season, you get a better rooting by planting in the fall.

Mr. HILBORN: There may be conditions where that's right.

AFTERNOON SESSION.

The SECRETARY moved that there are so many papers coming on that the paper by Mr. E. B. Edwards, of Peterborough, on "Co-operative Apple Growing" be taken as read and published in the proceedings. This motion was seconded by Mr. Morton and carried.

CO-OPERATIVE APPLE GROWING.

I advocate the extension to apple-growing of the principle of co-operation, which has already been found of so great advantage in other branches, and more especially, so far as farmers are concerned, in the matter of cheese-making. This co-operation may be on a small or on a large scale. It may be only the friendly union of two or three farmers in a neighborhood, or it may include a township or a whole county, and it may apply to those who have only small orchards as well, or perhaps even better than to those who have large ones, for the latter are generally better able to take care of themselves.

1. Co-operation may well begin with the gaining of knowledge on the subject. The two or three may make it a point to compare notes and exchange ideas and information, and the larger body may hold meetings and secure the presence of those who are able to impart instruction, with regard to the kinds of apples to grow, the best modes of growing them, and the best modes of disposing of them.

2. As a second step co-operation in buying trees for planting will secure the advantage not only of lower prices by ordering in larger quantities, but also of greater attention to the order, the prevention of the petty frauds of the tree peddler and greater satisfaction in every way. If I want fifty trees and two of my neighbors want twenty-five each, each of us will gain by sending in an order for one hundred trees at the lower rates that are offered for that quantity. This is an obvious and immediate advantage affecting the pocket, and is one that is within the reach of a small number who may choose to unite, as well as of a larger number.

3. When the orchard is in bearing there may with advantage be co-operation in such a matter as spraying, where the size of the individual orchard does not seem to warrant the providing by each one or a proper spraying pump. Two or three farmers in a neighborhood may purchase a pump and provide the materials between them, or a larger number may arrange with a man who owns an outfit to make a round of their neighborhood at the proper times. Many a farmer neglects to spray his orchard, because he thinks it hardly worth while to get a pump for himself, or because at a busy time he does not want to be bothered with something that he knows very little about.

4. When the apples come to be picked and marketed there is not only a fresh advantage to be gained from co-operation in marketing them, but there is a summing up of all the advantages already gained, the test and realization of the work of the earlier years. The knowledge and information gained, the prudent selection of varieties suitable to the locality and suitable for the market, the care in training the trees from the first year upward, the spraying, the tilling, and manuring of the ground, are all telling upon the crop produced. If the kinds of apples have been carefully and judiciously selected to begin with, the co-operating neighborhood will become known for certain good varieties of shipping apples. If the trees and the ground have been properly cared for and the trees have been properly sprayed, it will also become known for the quality of the fruit produced. Buyers will be attracted to such a neighborhood and if an immediate sale be made to them better prices will be obtained on account of the uniformity and quality of the fruit, and that without any combination to keep up prices. Or, if a shipment to the English or other market be determined upon, the advantage of co-operation becomes even more apparent. The man who has only an acre or two of orchard has not a sufficient quantity to ship by himself. By uniting their forces two or three, or a larger number, may make up a carload or a larger quantity, and thus secure the advantage of the greatly reduced rates applicable to the larger shipment. Having a larger quantity, too, there is an advantage in dealing with the commission agent and the better knowledge of the market.

5. For windfalls and fallen fruit co-operation may secure a joint evaporator. This is a matter of great importance, not only to provide a proper means of disposing of this class of fruit, but also to avoid the unwise course of glutting the market with poor and decaying apples, which disappoint both seller and buyer. This evaporator may be either on a large scale in a town or village, or may be a smaller one for a smaller neighborhood.

To sum up, I recommend the formation of county societies to bring together all those who are interested in the subject at stated intervals, and to hold meetings for discussion and gathering information, and to work together as far as possible in the directions indicated. In addition to this the apple-growers in a locality, even if they be only few in number, ought to be in touch the one with the other, and assist one another in such matters as spraying and the like wherever necessary. My ideal would be to see ten, twenty or fifty farmers in a neighborhood meet together and form a "co-operative society," each one agreeing to plant within the next five years ten acres of orchard, the varieties to be few in number and all suited for shipment, to properly study and carry out the care of their trees, and when the time should come for fruit bearing to unite in sending their apples forward under their own brand to the English market, having their evaporator for the windfalls, and if necessary their central frost and heat-proof storehouse at the central shipping point.

FERTILIZATION OF FLOWERS IN ORCHARDS AND VINEYARDS.

The PRESIDENT: I will now call upon Prof. Beach, horticulturist of the Geneva Experiment Station, New York.

Prof. BEACH said: I am happy to bring you greetings from our Experiment Station. We know something of your work at Ottawa, and in the United States Prof. Craig has an enviable reputation as being eminently qualified for the position he occupies. We also know something of your work through the excellent publication edited by your secretary, "The Canadian Horticulturist." It comes regularly to our table and keeps us regularly informed as to the lines of work that you are engaged in. In the line of economic entomology we feel that we get almost as much good in the United States out of the work of your "Canadian Entomologist" as you do yourselves. And then as to your own personal work, I had the pleasure of seeing in Chicago the magnificent exhibit which you made of apples there in the fall—an exhibit which, if I remember correctly, not only filled all space which was allotted to you but also overflowed into that which should have been occupied by the North-West Territories, and it was indeed a magnificent exhibit—one that you may well be proud of.

It is a mattter of common observation among fruit growers that certain varieties of orchard and vineyard fruits show a remarkable difference in productiveness in different locations without sufficient apparent reasons for such a difference. I have in mind an apple orchard, fifty or more acres in extent, set chiefly to blocks of Baldwin and Greening, each block containing but a single variety in the main part of the orchard, but mingled somewhat with other varieties in one section. The orchard has been set about twenty-five years and has been a disappointment to its owners because, although it usually bears some fruit each year, it has produced but three or four good crops in all its history. In the section where varieties are mingled with the Baldwins they have borne much more satisfactorily than have either the Baldwins or Greenings where they stand in blocks alone. The trees around the edge are thriftier and bear better than they do in the central portion of the orchard. In fact, the central portion of the orchard has never yet produced a good crop of fruit.

The owners think the trouble may be due to a combination of causes. The trees are planted but thirty feet apart which is too close for mature trees The soil the in central portion is thought to be naturally inferior to the scil in other sections. Hordes of insects have devastated some portions of the orchard and fungous deseases have not been wanting. While the orchard is not being impoverished by taking from it farm crops neither is it being manured nor cultivated. So far as spraying or pruning is concerned it receives much better treatment than most of the orchards in New York state. There seems to be good reason for believing that the trees are suffering from lack of nourishment due to crowding them too closely together on land not in a high state of fertility; to loss of foliage from insect pests and fungous diseases; to a lack of fertilizers, and to absence of cultivation. But there is no difference in treatment of different portions of the orchard so far as pruning, spraying, cultivation and fertilization of soil are concerned, and therefore the causes enumerated do not seem sufficient to satisfactorily account for the unproductiveness of varieties in certain sections while the same varieties in other portions of the orchard are comparatively productive. The unfruitful portions consist of separate blocks of Baldwins and Greenings unmixed with other varieties, and some have thought that possibly on account of this isolation of each variety the blossoms failed to set fruit.

A similar idea with regard to certain cultivated varieties of the native plum has long been entertained by some growers of that fruit in the Mississippi valley and other portions of the Great Central Plain. This idea is founded on observations that varieties such as Wild Goose and Miner set but little fruit when standing alone, although they blossom abundantly, while they are more productive when standing near other varieties from which their flowers may be assisted to set fruit.

Prof. Goff has shown* that with some kinds of native plums failure to set fruit may be partly due to imperfections in the flowers which render them incapable of set-

*Flowering and Fertilization of the Native Plum, *Garden and Forest*, vol. vii, 1894, pp. 262,-263.

ting fruit, but this does not account for those instances where a tree that was formerly barren becomes fruitful when another variety is planted near it. In such cases it appears that the flowers are capable of setting fruit, although they are incapable of setting fruit of themselves.

Some horticulturists have for many years believed that a similar condition of affairs also exists with certain cultivated grapes, especially with some of the hybrid varieties. Within the last three years I have been able to demonstrate that this belief is, in many instances, well founded. Mr. M. B. Waite of the U. S. Division of Vegetable Pathology, began a similar line of investigations in 1891 which resulted in showing that many varieties of pears, including some of the standard sorts, are incapable of setting fruit of themselves, a condition, so far as I am aware, that was wholly unsuspected by either practical or scientific horticulturists.

It appears, then, that in considering the unfruitfulness of grapes and pears a new factor must be taken into account, since it has been shown that a failure to fruit may sometimes be the result of the inability of the blossoms to set fruit of themselves. We have also seen that there is some reason for believing that this cause of unfruitfulness is not peculiar to pears and grapes only but that possibly it extends to other varieties of fruits as well. This brings us to the consideration of a subject that is coming more and more to be esteemed of great practical importance to fruit growing, namely, the fertilization of flowers in orchards and vineyards, especially in its relation to the production of fruit.

First it may be well to illustrate, or define briefly, the meaning of a few botanical terms which are convenient to use in a discussion of this subject.

In general the flowers of orchard and garden fruits are what botanists call perfect, that is, they contain both the male and female organs. The male organs produce an abundance of fine yellow powder called pollen. The female organs, called pistils, contain the rudimentary seeds. When the flowers open and the pistils are ready to receive the pollen, the end of the pistil becomes slightly moist and sticky, so that the pollen readily adheres to this portion of the pistil when it comes in contact with it. The pollen grains thus finding lodgment sprout and send out a minute tube which grows down into the central portion of the pistil till it reaches and fertilizes the rudimentary seeds contained therein. This is briefly the process of fertilization as that word is applied to flowers. After being fertilized, the rudimentary seeds begin to develop into seeds and the surrounding portions of the embryo fruit are thereupon incited into growth. On the contrary, if the pistil is not supplied with pollen it soon withers and no fruit is formed. In this connection it is not necessary to consider those unusual cases where fruit is developed without the action of pollen.

As stated before, for many years certain horticulturists have held the opinion that occasionally varieties of grapes were found in cultivation that were more prolific when standing in proximity to another variety that blossomed at the same time than they were when standing alone. In 1891 I planned to investigate this subject the following season and the investigations then begun have been continued every season since that time. As primarily planned the objects of the investigations was to determine if possible:

1. Whether the pistil of the grape flower is pollinated before the blossoms open.
2. Whether any varieties are incapable of setting fruit when supplied only with their own pollen.

Observations* on seventy-seven kinds of grapes, including eight species and their hybrids and crosses, showed that in every instance self-pollination occurred, so that with these varieties, at least, failure to set fruit could not be attributed to lack of pollination. Twenty-one of these seventy-seven kinds of grapes cannot fruit when supplied with none but their own pollen while they are able to set fruit when planted near other varieties that blossom with them. With these varieties failure to fruit must result when they are set by themselves out of the reach of pollen from other vines.

*Beach, S. A. The Self-Pollination of the Grape, *Garden and Forest* V., 1892, pp. 451-452; also Annual Report of N. Y. State Experiment Station, Geneva, N. Y., for 1892, pp. 597 to 606.

The second question, namely whether any varieties are incapable of setting fruit when supplied with none but their own pollen is evidently one to be fully decided only by experiment. Investigations concerning this subject were made by covering the blossom clusters with paper bags before the blossoms opened. The bag was slipped over the cluster and the mouth was then drawn together and fastened with a wired label. After the blossoming season had passed, the paper bags in some instances were replaced with bags made of cheese cloth or mosquito netting; in other cases the paper bags were allowed to remain till the fruit was gathered. It is apparent that all outside pollen was excluded from the covered clusters by the paper bags and whatever fruit set within the bags must have been the result of close fertilization, that is to say, the pollen necessary to fertilization of the flower must have been produced either by itself or by some other blossom in the same cluster.

Treated in this manner some varieties were able to fruit perfectly; other varieties failed to develop any fruit whatever, and between these two extremes there was every gradation. In order to present some of the results of these experiments in this paper an attempt has been made to classify the varieties according to their ability to set fruit.

Class I. Grapes which are fully self-fertile are named in the following table. By fully self-fertile is meant that so far as observed not more than three per cent of the blossoms fail to set fruit.

In this and the following tables the character of the stamens when known is indicated as follows: "s" indicates that the stamens are short: "l" that they are long: those intermediate between these two classes are mentioned in a foot note. Where self pollination before the blossom opens has been observed this is indicated by a *. The classification is based wholly on the evidence of my experiments. Further testing is considered necessary to determine the classification of varieties marked with a question mark.

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
l	*	Ambrosia	Salem	Vin. and Lab.
l	....	Campbell	Triumph	Lab. and vin.
l	....	Croton	Delaware x Chas. de Fontainbleu	Vin. and Bourq. and Lab.
l	*	Delaware		Bourq. and Lab.
l	*	Diamond	Concord x Iona	Lab.
l	*	Etta	Elvira	Lab. and vul.
l	*	Herald		Lab. (or Lab. x).
l	....	Janesville		Lab. and vul.
l	*	Lady Washington	Concord x Allen's Hybrid	Lab. and vin.
l	....	Mabel?	Walter	Lab. and Bourq.
l	....	Mary's Favorite	Delaware x?	Lab. and Bourq. (and vin?).
l	....	Metternich	Clinton x Poughkeepsie's Red	Vul. and Lab. and (Bourq.?).
l	....	Monroe		Lab. and?
l	*	Moore's Early	Concord	Lab.
l	*	Niagara	Concord x Cassady	Lab. x (vin.?).
l	....	Opal	Lindley	Lab. and vin.
l	*	Poughkeepsie Red	Iona x Delaware or Walter	Lab. and (Bourq.?).
l	*	Prentiss	Isabella	Lab.
l	*	Profitable	Elvira x Perkins	Lab. and vul.
l	....	Rochester		Lab. (or Lab. x?).
l	....	Rogers No. 13	Chasselas x Mammoth	Vin. x Lab.
l	....	" 24	Bl. Hamburg x Mammoth	"
l	....	" 32	" "	"
l	*	Rutland		Lab. x (vin.?).
l	*	Senasqua	Concord x Bl. Prince	Lab. x vin.
l	*	Vitis aestivalis		Aest.
l	*	Winchell		Lab.

Total, 27; 100 per cent. with long stamens.

CLASS II. Grapes which are partly self-fertile but still practically capable of fruiting satisfactorily alone are named in the following list:

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
l	*	Agawam, Rog. 15	Bl. Hamburg x Mammoth	Vin. x Lab.
l	....	Alice		Lab.
l	....	Brilliant?	Lindley x Delaware	Lab. and vin. (and Bourq.?).
l	....	Burrows No. 42c	Concord x Jefferson	Lab.
l	*	Catawba		"
l	*	Caywood No. 50		
l	*	Centennial	Eumelan	Lab. and vin.
l	*	Clinton		Vulp.
l	*	Concord		Lab.
l	*	Cottage?		"
l	....	Diana?	Concord	"
l	*	Early Market?	Catawba	
l	....	Elsinburg	Elvira	Lab. and vul.
l	*	Elvicand		Aest.
l	*	Elvira	Elvira x Candicans	Cand. and vul. and Lab.
l	*	Empire State	Taylor	Vul. and Lab.
l	....	Golden Grain	Hartford x Clinton	Vul.p x Lab.
l	*	Hartford	Lindley x Del	Lab. and vin. (and Bourq.?).
l	*	Highland		Lab.
l	....	Hopican	Concord x Jura Muscat	Lab. x vin.
l	*	Isabella		Lab. and vin.
l	*	Iona		Lab.
l	*	Jefferson	Catawba	"
l	....	Jessica	Concord x Iona	"
l	*	Little Blue		
l	*	Mills		Lab. (or Lab. x ?).
l	*	Olita	Muscat Hamburg x Creveling	Vin. and aest.
l	....	Paragon	Delaware	(Lab. and Bourq.?)
l	*	Pocklington?		Lab. (or Lab. x ?).
l	....	Rommel	Concord	"
l	....	Standard	Elvira x Triumph	Lab. and vin. and vul.
?	*	Triumph	Delaware	(Lab. and Bourq.?)
l	....	Ulster?	Concord x Chasselas Musque	Lab. x vin.
l	*	Vergennes	Catawba x aestivalis	Lab. x aest.
l	*	Worden	Concord	"
				"

Total, 35; character of stamens of Triumph, unknown; otherwise, 100 per cent. long stamens.

CLASS III. Grapes which are partly self-fertile but set fruit unsatisfactorily when alone are named in the following list:

l	*	Adirondack		
s	*	Amber Queen	Marion x Bl. Hamburg	Lab.
l	....	August Giant?	Black Hamb. x Marion	Vul. x vin.
s	*	Beagle	Elvira x Ives	Vin. x vul.
l	*	Canada	Clinton x Bl. St. Peters	Lab. and vul.
l	*	Canonicus		Vul. x vin.
l	....	Daisy	Goethe	Lab. and vul.
l	....	Dracut Amber		Lab. and vin.
l	*	Duchess	Wh. Concord x Del. or Walter	Lab.
s	*	Eumelan		Lab. and (Bourq. ?).
l	*	Geneva	Wild Lab. x Mus. Alexa. x Iona	(Lab. and vin.?)
l	*	Nectar	Concord x Delaware	Lab. and vin.
l	....	Noah?	Taylor	Lab. and (Bourq. ?).
l	....	Perkins		Vul. and Lab.
l	....	Vitis Arizonica		Lab.
s	....	Vitis rupestris		Arizonica.
s	..	Vitis Solonis var.		Rupestris.
		Novo Mexicana		
s	*	Vitis Solonis		Solonis var N. M.
				Solonis.

Total, 18; 66⅔ per cent. have long stamens, and 33.3 per cent. short stamens.

Of the 79 varieties of known stamens fruitful to some extent when standing alone, less than 8 per cent. have short stamens, and all these short stamen varieties are included in the list on this page. Three of them are wild vines, and three are cultivated.

CLASS IV. Grapes which are abortive fruit but do not perfect fruit when alone:

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
s	....	Aminia, Rog. 39	Bl. Hamburg x Mammoth	Vin. x Lab.
s	*	Black Eagle		Lab. x vin.
s	*	Brighton	Concord x Diana Hamburg	Lab. and vin.
s	....	Essex, Rog. 41	Bl. Hamburg x Mammoth	Vin. x Lab.
s	*	Gaertner, Rog. 14	Chasselas x Mammoth	"
2	*	Herbert. " 44	Bl. Hamburg x Mammoth	"
s	*	Massasoit, " 3	Chasselas x Mammoth	"
s	....	Merrimack, " 19	Bl. Hamburg x Mammoth	"
s	*	Requa, " 28	" "	"
s	*	Roger's No. 5	Chasselas x Mammoth	"
s	...	Salem, Rog. 53	Bl. Hamburg x Mammoth	"
?	....	Vitis cinerea		Cinerea.
l	*	Vitis Doaniana		Doaniana.
s	*	Wilder, Rog. 4	Chasselas x Mammoth	Vin. x Lab.

Total, 14; of the thirteen varieties in this list with known stamens, twelve or 92 per cent. have short or recurved stamens; 2 intermediate recurved.

CLASS V. Grapes in which self-pollination had no perceptible influence on the ovary:

l	....	Aledo		
l	....	Amber	Taylor	Vul. and Lab.
s	*	Barry, Rog. 43	Bl. Hamburg x Mammoth	Vin. x Lab.
s	....	Blanco	Elvira x Triumph	Lab. and vin. and vul.
s	*	Burnet	Hartford x Bl. Hamb	Lab. x vin.
s	....	Clevener		Bourq. ?
s	. .	Creveling		Vin. and aest.
l	....	Eaton	Concord	Lab.
s	*	Eldorado	Conc. x Allen's Hybd	Lab. and vin.
2	*	Elvibach	Elvira x Bacchus	Vul. and Lab.
l	....	Faith	Taylor	"
l	*	Hayes	Concord	Lab.
s	*	Hercules	A. Rog. Hybrid	Lab. and vin.
s	....	Jewel	Delaware	(Lab. and Bourq.?)
l	*	Lady	Concord	Lab.
s	*	Lindley, Rog. 9	Chasselas x Mammoth	Vin. x Lab.
s	*	Marion		Vul.
l	*	Maxatawney		Lab.
s	....	Norwood		"
s	....	Red Bird	Lindley x Champion	Lab. and vin.
s	....	Red Eagle	Bl. Eagle	"
s	*	Roscoe	Del. x Martha	Lab. and (Bourq. ?).
s	*	Vitis Champini		Champini.

Total, 23; seven or 30 per cent. of the above list have long stamens, and sixteen or 70 per cent. have short or recurved stamens; 2 recurved.

These lists contain in all the names of one hundred and seventeen grapes, twenty-seven of which are fully self-fertile; thirty-five are partly self-fertile but are able to fruit satisfactorily of themselves; eighteen are partly self-fertile and fruit unsatisfactorily of themselves; fourteen have pollen self-irritant only, and twenty-three show no appreciable development of the ovary as a result of self-fertilization.

For all practical purposes the varieties may be placed in three groups. The first group, including Classes I and II, contains those kinds which are able to fruit satisfactorily when standing alone. Of the one hundred and seventeen varieties mentioned in the preceding lists sixty-two, or a little more than one-half, are able to fruit satisfactorily

when standing alone. The character of the stamens has been observed with sixty-one of these self-fertile varieties and in every instance the stamens are long. In this group are found among many others the following well-known kinds: Agawam, Catawba, Clinton, Concord, Delaware, Diamond, Diana, Elvira, Hartford, Isabella, Moore's Early, Niagara, Pocklington and Worden; and also Brilliant, Elvicand, Mills, Triumph and Winchell of the newer kinds.

The second group, identical with Class III in the preceding lists, contains those varieties which are able to set some fruit, but when standing alone yield clusters that are imperfect and unsatisfactory. This group includes among others Beagle, Canada, Duchess and Eumelan.

The third group, including Classes IV and V, contains those varieties which when self-fertilized did not bring a single fruit to perfection. In it are found among other kinds Barry, Black Eagle, Brighton, Eldorado, Massasoit, Merrimack, Lindley, Salem and Wilder. Nearly all the varieties in this and the next preceding group are hybrids, but some are not. It will not do, however, to reason from this that hybrids cannot bear fruit when self-fertilized, because two-thirds of the first group are hybrids. Neither are we prepared to say that all cultivated varieties belonging purely to one species are able to fertilize themselves, since some few varieties that are not commonly thought to be hybrids cannot fruit alone.

Rarely have varieties with short stamens been found that were able to set any fruit of themselves, and even then the clusters were very imperfect. Prof. Munson holds* that in all species of Vitis wild vines having flowers with short recurved stamens are incapable of setting fruit of themselves.

While it would not be well to accept results of observations on but an hundred and seventeen varieties in one locality as conclusive for all varieties and localities yet the observations are on a sufficiently extensive scale to be valuable in indicating what results may be expected from wider observations. They indicate that:

1. Only cultivated varieties of grapes having long stamens may be expected to fruit satisfactorily by themselves.
2. Not all varieties with long stamens are able to fruit satisfactorily by themselves.
3. Varieties having short or recurved stamens, and other self-sterile sorts if grown at all ought to be intermingled with other vines that blossom at the same period.
4. Most of the varieties incapable of setting fruit of themselves are hybrids.
5. Many hybrids are capable of setting fruit satisfactorily of themselves.
6. The failure of grapes to set fruit of themselves, so far as may be determined from these investigations, is not for lack of pollination. Observations have been made on thirty-one of the fifty-five varieties which were noted as setting fruit of themselves unsatisfactorily or not at all and in every instance self-pollination occurred before the blossoms opened.
7. Blossoms which are not incited to develop fruit by the action of their own pollen may fruit satisfactorily when supplied with pollen of some other variety. This is shown not only by experiments where the blossoms of such varieties were hand pollinated with pollen from some other variety, but also by abundant evidence of their fruiting in mixed vineyards where they are exposed to the access of pollen from other varieties. Thus Barry, Eaton, Eldorado, Lindley, Brighton, Black Eagle, Gaertner, Herbert, Merrimack, Salem and Wilder proved in these experiments utterly incapable of perfecting fruit when supplied only with their own pollen, yet they are quite generally valued as amateur varieties and some of them are occasionally planted in commercial vineyards.

The experiments of Mr. Waite with pear flowers have already been referred to. They were undertaken in the spring of 1891 for the purpose of ascertaining the value to pear flowers of insect visitors and the work of that season brought out the fact that the trees experimented with were† divided sharply into two classes, those which would fertil-

*Beach, S. A. Notes on Self-Pollination of the Grape. Annual report, N. Y. Agricultural Experiment Station, Geneva, N. Y., 1892, p. 604.

†Pollination of Pear Flowers: Bul. 5, U. S. Div. of Vegetable Pathology, Washington, D. C., 1894, p. 20.

ize their own blossoms and those which could not. During the following year he carried on extensive investigations concerning the ability of cultivated pears to set fruit of themselves. These investigations, pursued in widely separated localities, showed that some of the best known and most widely cultivated varieties of pears were wholly or partly incapable of setting fruit of themselves. The limits of this paper will not permit his careful methods to be presented in detail. As a result of his investigations he has prepared the following lists.

Self-fertile varieties: Angouleme, Bosc, Brockworth, Buffum, Diel, Doyenne d'Alencon, Flemish Beauty, Heathcote, Kieffer, Leconte, Manning's Elizabeth, Seckel, Tyson, White Doyenne.

Self-sterile varieties: Anjou, Bartlett, Boussock, Clairgeau, Clapp's Favorite, Columbia, De la Chene, Doyenne Sieulle, Easter, Gansel's Bergamotte, Gray Doyenne, Howell, Jones, Lawrence, Louise Bonne de Jersey, Mount Vernon, Pound, Sheldon, Souvenir du Congres, Superfin, Wilder, Winter Nelis.

Both in Mr. Waite's investigations with pears and in my investigations with grapes it has been shown that although a pistil may be plentifully supplied with pollen from its own blossom yet in self-sterile varieties no fruit is developed as a result of such pollination. In other species of plants similar instances have long been known. In such cases unfruitfulness is not due to a lack of pollen but to a lack of a right kind of pollen. In many observed instances when the pistils of self-sterile plants are supplied with pollen from some other variety of the same species, or even of some nearly related species, fruit is produced.

Another interesting fact is that the pollen which is powerless to incite fruitfulness on flowers of its own variety may be able to fertilize the blossoms of some other variety. I have had currants develop fruit when the pistil was supplied only with gooseberry pollen and vice versa, and pears when supplied only with apple pollen; others have reported that peach blossoms set fruit when supplied only with cherry pollen. These may be considered rather extreme cases and in such instances the resulting fruits are apt to be seedless. More nearly related species, as, for example, the different species of grapes or the different species of gooseberries, produce seeds quite readily when fertilized by each other in this way.

Evidently the fruitfulness of a self-sterile variety may be accounted for by the proximity of a supply of congenial pollen, even though it be produced by a plant not of the same but of some nearly related species, so that, while the production of fruit depends on a supply of congenial pollen, that supply does not always come from blossoms of its own variety but may come from other varieties or even from other species.

From what has been said it ought not to be inferred that in all instances where trees are unfruitful when standing alone the difficulty is due to lack of congenial pollen for fertilizing their blossoms. It would be easy, for example, to show that many varieties of fruit are less productive when standing alone than when mingled with other varieties in a well cultivated orchard, but this does not necessarily prove that the reason for its unfruitfulness when isolated is for lack of proper pollination of its blossoms, for it usually happens that it has much better care in the orchard where it becomes someone's business to look after its welfare than it has when standing alone where it is apt to be somewhat neglected. In making comparisons of this kind all conditions which may influence the fruitfulness of the plant ought to be carefully considered and conclusions drawn only from carefully conducted experiments.

In conclusion let it be stated that this essay is intended simply as a contribution to our knowledge of the fertilization of flowers in orchards and vineyards, a subject concerning which we as yet know very little, but which opens before us a wide field for investigation, and which promises results of very great practical importance to horticulture. It was shown in the introduction to this paper that there are reasons for suspecting that the same conditions may be found with some other kinds of orchard fruit which are known to exist with pears and grapes, namely: That some varieties are unable to set fruit at all, or only imperfectly, when standing alone. Here is suggested a most interesting line of experiments to which it is hoped that horticulturists will soon give the attention it deserves. Since it is true that some varieties of fruits come

into favor when grown in mixed plantations but bring loss and disappointment when on the basis of such records they are set in extensive plantations unmixed with other varieties, then, before setting large plantations of a single variety it is the part of wisdom to determine whether or not that variety can fruit satisfactorily of itself.

On the other hand the knowledge that lack of cross pollination in certain instances is sufficient cause for unfruitfulness should not make us hasten to attribute to it all instances of unfruitfulness that have vexed our souls and lightened our purses in years past, making of it a scape-goat which we solemnly send away to the wilderness after laying all our sins of omission and commission on its devoted head. Knowing this as a possible cause of unfruitfulness we should be none the less careful to employ all the other means conducive to the development of vigorous, fruitful plants, which the science and art of horticulture have placed at our command, such as a study of the adaptability of different varieties to different soils and climates; the cultivation and fertilization of the soil, pruning, thinning the fruit, and spraying for the prevention of fungous diseases or for the destruction of insect pests.

The SECRETARY: I think this is one of the most valuable papers that we shall have to place within our records, and I wish, before we proceed to discuss it, to move a most hearty vote of thanks to our friend Prof. Beach, who has come to us from the New York State Experiment Station, Geneva, to give us this paper. I am very glad indeed that Prof. Craig suggested to me the advisability of asking him to come, and I at once responded, because I had heard Prof. Beach at the Western New York Horticultural Society on subjects allied to the one he has just dealt with.

Mr. BEADLE seconded the motion, which was carried amid applause.

The PRESIDENT tendered the vote of thanks to Prof. Beach, who said it was a pleasure to be here, as he always learned more at such meetings than he brought to them.

The SECRETARY: With regard to the Baldwin apple, have you ever investigated the flower of this apple whether it was self-pollinating or not? In New York State the Baldwin has not been so productive for ten years past as it used to be. They used to recommend a person who wanted to know what to plant, "Plant 99 Baldwins out of 100"; and when asked about the other hundredth the answer would be, "For the hundredth plant another Baldwin." In the vicinity of Grimsby there are large orchards of Baldwins that have not produced fruit for ten years past, and I would like to know whether this is the difficulty—whether it is a variety that is not self-fertilizing.

Prof. BEACH: I wish I could answer the question, but I cannot. I know some investigations have been made with Baldwins, but not sufficient to enable us to speak with any degree of certainty in regard to them—not enough to be sure that it is the only cause. Of course we know that there are other reasons for inducing unfruitfulness in trees, and in my opinion, throughout Western New York, trees are crowded too closely together for one thing. They set trees about thirty feet apart, and the air cannot circulate; and they crop the orchards to some farm crop and put them on ground that their fathers before them had taken farm crops from for years and years, and they find that they cannot get the crops off because the land is impoverished. This opens before us one of the widest fields of investigation of any subject which I am acquainted with just now of practical importance to the horticulturist. A man does not like to spend the time to carry on these investigations himself, and I think our experiment stations ought to be equipped with sufficient money and a man who can devote his time to it to carry on just such investigations as that. I do not know of any one that can answer the question.

Mr. PATTISON: I have been very much puzzled with one of the Chickasaw varieties, and that is the Weaver. I had one standing among other plums, that is to say more cultivated varieties, and those trees, while making very fine growth and setting a very heavy blossom, refused to bear. I have thought that the reason was that they needed another of the Chickasaw variety to fertilize those. They don't blossom at the same time as the other plums. Would that account for it?

Prof. BEACH: I am of opinion that that is right. In our orchard we have a number of varieties of the Americana, and the other native species, and they set fruit quite heavily;

our trees are usually loaded; and yet your experience is one that we are quite apt to have where the trees are alone with some of our native sorts; and I should expect that if you would set with them some native variety that blossoms at the same time they would produce fruit, although I cannot answer with certainty in regard to it. I should expect that plums of the domestic class would be able to fertilize.

Prof. HUTT: What would Prof. Beach recommend to fruit growers who have made the mistake of setting one variety of trees, or planting one variety of vines?

Prof. BEACH: I should first make sure that they needed a supply of pollen—because we have fifty chances out of one hundred that they are all right—but if I was sure they needed a supply of summer pollen, I would graft or bud some other varieties in with them. If your orchards are set all right, you cannot crowd in another row of trees very well, and I don't see any other way out of it except to graft or bud or branch other trees in. The insects will help a great deal in the distribution of pollen.

Prof. HUTT: Wouldn't it be well if fruit growers kept bees? I do not believe there are enough wild bees to effectually fertilize as well as it should be.

Mr. ORR: Is the Vergennes a self-fertilizing grape?

Prof. BEACH: The Vergennes comes in a class that is able to set very satisfactorily, but is not perfectly self-fertilizing, that is to say, a cluster would not have every one maturing, but it would be satisfactory.

Mr. ORR: Can you say what varieties should be planted in the block with that?

Prof. BEACH: Most any other variety that would blossom at the same time, but you would find that Vergennes would set fruit satisfactorily of itself, although it comes into what I call the second class.

Mr. PATTISON: Is it not the case that even where they are self-fertilizing the quality of the fruit is improved by the alternate setting, or setting in close juxtaposition?

Prof. BEACH: Have you had any experience of that kind?

Mr. PATTISON: I have always adopted that plan myself, but I have not had sufficient experience to be certain of it.

Prof. BEACH: I think you better call for expressions of opinion from others in the audience. So far as I know there is no influence of the pollen on the quality of the fruit, if that is what you mean. The only way can be that different varieties set close together might take slightly different materials from the soil, and that they would have a better chance in that way—that is, they could not be so closely crowded for food.

Mr. BEADLE: The experiments made by Mr. Waite to which Prof. Beach referred are well worthy of study, and I presume his report can be easily obtained by writing to our Secretary. There he goes into the matter of how far in the course of his experiments he has thought that the pollen of different varieties of pear affected the size, appearance and perhaps in a certain sense the quality of fruit. They are the first experiments I have seen that throw any light upon that question which has been asked during the last half century. I sent the Secretary Prof. Waite's list of apples and pears so far as he has gone, in which he sets forth how many are self-fertile and how many are not self-fertile. That list was published in the *Horticulturist* last year.

Prof. BEACH: Of course I had that question in mind in examining the fruits where I had done cross fertilizing, and I must confess that in the grapes I never could detect any immediate influence of the pollen on the fruit; but I saw the same pears in Mr. Waite's experiments, and there was a plain difference, which is set forth to some extent by the photographs in the article which Mr. Beadle has referred to, published by the Department; and I may say that not only are the publications of the Department at Washington to be had for the asking, but if any of you care for the bulletins of the Geneva Station, you can doubtless get them by writing to the Director at Geneva, N.Y., and asking to have your name put on the bulletin list.

Mr. WHYTE: Every grape grower should have heard the address this afternoon. It is a thing that has puzzled most people who have plenty of grape vines, to know how it is

that they haven't taken a crop of grapes while others have succeeded. I have a Brighton vine that bore a heavy crop with fine large bunches in one place, and another part of the vine it was a thin bunch and a small crop; and it was the same with most of the grapes mentioned by Prof. Beach. I know a man who grows the Agawam in a large bunch of perfectly set fruit. I know another place where the Creveling is grown in the same way, whereas with me the Creveling was a failure, and I know now it was set in a place where it didn't get pollen from other varieties. Another influence is the proper fertilizing of the soil. I have noticed in some varieties they were getting worse and worse all the time. In a garden the next block to my place two or three years ago the owner showed bunches of Brightons about ten inches long and of proportionate width of most beautiful grapes. I never knew anybody else grow such bunches of Brightons, and on going to his garden I found he had fertilized to an enormous extent; he had got an opportunity of getting a large lot of stable manure at a low price and he laid it on thick, and I was satisfied that that was the cause of those large bunches of grapes.

Prof. BEACH: I think there is no doubt that that is true. This question of pollination does not explain all failures to set fruit. You will find that plants which are in a good state of vigor are able to set fruit more abundantly; of course, leaving out of the question a state when they are in that active growth of young plants when they are not in bearing; but after you have got them so that they will bear a good crop, then plants that are in a good vigorous condition will, I believe, set fruit more abundantly and give you more of it than plants that are in a weaker condition.

Mr. WHYTE: Does the actual fertilization produce pollen in a vine that would not otherwise have the pollen?

Prof. BEACH. I don't think it is a question of pollen or not, but I think it is a question of the whole system or being. The value is not in the pollen, but simply that the pollen does not have an effect on its own pistil. Sometimes you will see varieties which seem to naturally set very well, and others which do not set very well; and there is something about the natural tendency of the variety as to whether they will set fruit well or not, and the condition of them, with other causes, will affect the vine or plant. I had a fine Eldorado crop this year, and the buds all fell off before they opened, so that although the Eldorado is not able to set fruit of itself, I could not lay it to that or the lack of pollen even. These veteran horticulturists here that have had years of observation and experience would be able to answer this question better than I. What do you think about that, Dr. Beadle?

Mr. BEADLE: I have not experimented with the Brighton grape in that direction; but I have just noticed this change, that there are years when the Brighton would seem to set its fruit much more perfectly than in other seasons. I suppose I have taken it from what I have read more than from any personal observations—you know that a busy person in cultivating season cannot carry out experiments of this nicety very well—but I had supposed that the most of the trouble with the Brighton is with the stamens: they do not rise up and become erect, but they are re-curved, consequently the pollen cannot get on to the pistils unless some insects happen to carry it there. I have noticed that in some seasons my Brighton grape vines would set their fruit better than in other seasons, whatever the cause may be. It may have been that the plant was in such vigorous condition that the stamen would stand upright and allow the pollen to reach the pistils.

PLUM GROWING ON THE SOUTH SHORE OF THE GEORGIAN BAY.

The Secretary read the following paper by Dr. AYLESWORTH, of Collingwood, on the above subject.

It was a surprise to me when I received a letter from your secretary asking me to read a paper before this meeting of the association, for prior to that time it had never entered my head that I had anything to communicate that would interest such veteran

fruit growers as many of you are. He suggested as my subject, "Plum Growing on the South Shore of Georgian Bay," overlooking the facts that this shore extends, including inlets, at least 100 miles and that my parish is not co-extensive. Portions of this shore, such as the Beaver Valley, have already demonstrated their adaptability to the growth of apples and plums and I have no doubt the whole southern coast-line is so adapted. But my personal experience and knowledge is confined to the neighborhood of Collingwood which is near the eastern extremity of this shore line, and as I wish any information I may be able to give to be reliable, I will confine my remarks to its neighborhood, say a radius of from five to fifteen miles, of the town.

Twenty years ago I settled in Collingwood, and my father, who was already a resident, immediately began pointing out the high character and quality of the fruit that was being grown. The quantity of this fruit, however, was so small, that what fruit was consumed by those who did not grow it themselves had to be imported. These conditions resulted in my planting the first commercial orchard in that section, consisting of 50 pears, 600 plums and 1,000 apple trees. I had the usual experience of pioneers and saw many and heard of more wise heads wagging at my rashness.

The full information so freely given, and so widely distributed in the earlier reports of this association, saved me many mistakes which I would have otherwise added to those I did make. And I would like to express here the high appreciation I have of the work done in developing fruit culture in Ontario by this association. Some six or seven years after planting I had a large crop of plums, and the fabulous stories of my profits (the largest I heard of being $9,000 for the season) caused the wagging heads of the wise-acres to take a different direction and induced many to plant trees; until now there are a number of orchards as large as mine besides many smaller ones. The planting continues with an increasing ratio unto this day, so that the number of trees that will come into bearing each year in the future will be very great.

Within ten years the first carload of apples was shipped from Collingwood and the quantities of plums were very small indeed, if any.

The quantity of apples shipped now by local dealers and growers within the above radius is about 12,000 barrels, while foreign buyers probably take care of about as many more, say 20,000 barrels in all at the least. Local dealers and growers ship about 17,000 baskets of plums, and from stations within the above radius enough more is shipped to make 20,000 baskets. As yet very few pears are shipped; I am, perhaps, the largest individual grower, having 50 trees in full bearing and 200 more just beginning. There are not enough peaches grown for home consumption yet. Neither are there enough grapes and small fruits grown for home consumption unless it be strawberries.

Within ten years the quantities of fruit produced will be quadrupled, or 80,000 barrels of apples and 80,000 baskets of plums, besides indefinite quantities of peaches, pears, apricots and small fruits, for pears are already going to the north shore of the bay and home-grown peaches and apricots have ceased to be a novelty. There is one pear orchard of 700 trees and several peach orchards of 200 trees planted already.

It must be understood that the fruit belt does not cover the whole country for, for the best success, you must plant between the line where the water of Georgian Bay ceases to modify the effects of the high latitude, and the water.

The distance this line extends inland varies much, where the highland or central plateau of Ontario (some places 900 ft. above the bay) comes close to the water this line may be within a mile of the shore, but where lower lands or valleys debouch upon the bay this line retires in places as much as fifteen miles from the shore. I mean by this that there is a strip of fruit land from one to fifteen miles wides adjoining the water, and in length about one hundred miles. This paper is confining itself to the extreme eastern ten miles of this strip.

The conclusions I have reached from my own experience and observation are:

1. That any kind of apple that can be grown anywhere can be grown in this section and brought to a perfection impossible further south. I have from my own orchard filled a barrel full enough to ship with 108 specimens of Northern Spy apple, some of them weighing between 19 and 20 ounces.

Lest this seemingly fabulous story should cause my veracity to be questioned I would point out that if the apples in this barrel had weighed the usual 135 pounds it would have necessitated their averaging 20 ounces. But when the air space is deducted in a barrel of apples of that size they did not average over 18 ounces.

2. Any kind of plum grown any where can be grown here and brought to the greatest perfection.

3. Any of the less tender varieties of pears grown in Ontario can be grown here to perfection unless it be some of the late winter pears, which will in some years find the season too short to ripen thoroughly. The most of the trees I have planted are of three varieties, Clapp's Favorite, Flemish Beauty and Bartlett. But I have fruited the three that are marked the highest on the list in your last report, the Anjou, Bartlett and Sheldon, and have had not the slightest trouble in perfecting them. I have been competing successfully with the California pears in the Winnipeg market for several years.

4. In the past, want of faith in the climate has prevented the peach from being planted, and most of the fruit produced has been seedlings. But some growers are now planting quite extensively and no doubt in a few years the peach crop of this section will have to be taken account of. I have Early Crawford peaches planted some five years and fruiting three years and have yet to find a twig injured by the climate.

5. Grapes I have no personal experience with, but a reliable friend assures me of the correctness of the list given below from his experience.

We are honored by a special division for grapes in your report known as the Lake Shore division, and my friend objects strongly to the list given, and would substitute the following, all of which he has grown successfully :

Black—Concord, Creveling, Wilder, Worden.

Red—Agawam, Delaware, Brighton, Lindley and Salem.

White—Moore's Diamond, Niagara and Green Mountain.

Grapes can be produced in great profusion, but owing to their being later than those produced south, when ripe the price is very low ; I have no doubt that this has prevented others, as it has myself, from planting for market. But as northern Ontario opens up, our proximity gives grape growing on Georgian Bay a future.

After enquiring diligently among those I knew had devoted most attention to the growth of small fruits I have been unable to learn of any that had had a failure from climatic causes.

The soil varies from a light sand to the heaviest clay, so that the favorite soil of any given fruit can be selected. I firmly believe this fruit belt will rival the Niagara Peninsula as a fruit country in the near future.

Fifteen years ago fruits and fruit trees had no enemies, but now we have nearly all that the more highly civilized regions boast of, but I am fully presuaded that they are not nearly so virulent as in warmer climates. Though the black-knot has been introduced and gained considerable headway, a little energy on the part of the inspectors has caused its diminution instead of its increase, and it now seems quite under control.

Fifteen years ago all kinds of fruits came to market in all kinds of boxes, barrels, baskets and bags But, to-day things are different and I think we will soon equal the best in the care bestowed upon our fruit.

Collingwood as a shipping point for fruit is unrivalled, as the two fleets of steamers with their headquarters there bring to our doors all the north and west where fruit cannot be grown, and the completion of the Parry Sound Ry. will give us direct communication with the whole of northern Ontario and Quebec. So that this section has the greatest advantages on account of its proximity to the best markets of our own country and the western States, while freight rates to England are no more than from southern Ontario.

Remembering our latitude many of the foregoing statements may seem fabulous, nevertheless they are true, and are not only true but are consistent with all the facts known to science concerning climatic conditions and the growth of fruit. Perhaps the most convincing way to put the subject in the few moments at my disposal will be to take a general view of Ontario and New York State. Southern New York, as well as Pennsylvania is mountainous and miles from a large body of water, and there is no

intense excitement about its great adaptability to fruit growing in that section. Portions of central New York and along the Hudson excel in this particular. But when you come still further north to Niagara county and its neighborhood you have the eastern paradise of the fruit grower of the northern States. Crossing the line you have the same conditions on the Peninsula between lakes Erie and Ontario.

The fruit regions follow the shores of the lakes, but it is not all the shores of each lake that are thus favored, for just as it is impossible to grow peaches on the north shore of Lake Ontario east of Toronto while its south shore is specially adapted to its production, so it is impossible to grow fruit on the north shore of Georgian Bay while its south shore seems well adapted to it; peaches being grown there with ease though seventy-five miles north of the north shore of Lake Ontario.

Most of this is trite to those who have given it attention, but there is one point never seen or heard mentioned, and as it is a practical one I would like to state it here, the more especially as I know most of you sympathize with my feeling of dissatisfaction, which has been much increased since our successes at the Columbian Exhibition, when I think our neighbors to the south are getting ahead of us in any useful art or calling.

A few moments ago I referred to the extreme adaptability of some portions of central New York to fruit growing, grapes being the chief specialty. The facts are that these favored sections occur on the margins of the smaller lakes with which central New York is studded. And the point I wish to make is that we have a lake very close to us here in Orillia, lake Simcoe, that should afford equal opportunities upon some parts of its shore to produce fine fruits in abundance.

Personally I have no doubt whatever that there are bonanzas in fruit growing around the shores of Lake Simcoe that only await experiment backed by intelligence and enterprise to enrich some men who I sincerely hope will be Canadians. For while glad to receive strangers it seems to me it would be humiliating to have them come in and pick up such plums (literally as well as figuratively) which we have been too stupid to see though living alongside of them all our lives.

PACKING FRUIT FOR EXPORT.

Mr. A. H. PETTIT read the report of the committee which had been asked to deal with the recommendations submitted by the Deputy Minister of Agriculture, as follows:

SUGGESTIONS FOR ACT *RE* PACKING FRUIT FOR EXPORT.

1. The name of the variety shall be stamped upon the barrel, and the class whether 1, 2, 3.

2. The classes (No. 1 and 2) shall be uniform throughout the barrel.

3 The packer shall put his name and address on all apples marked No. 1; and on No. 2 apples a brand by which they may be known as such.

4. The grades shall be those laid down in the Dominion Inspection Act, viz:

No. 1 inspected Canadian apples shall consist of well-grown specimens of one variety, of nearly uniform size, of good color, sound, free from scab, worm-holes and bruises, and properly packed.

No. 2 inspected Canadian apples shall consist of specimens of one variety, reasonably free from the defects mentioned in class No. 1, but which, on account of the inequality of size, lack of color, or other defects, could not be included in that class.

6. The size of the apple barrel shall be as follows: length of stave 28 inches; length of head, 16½ to 17 inches as laid down in the Statutes of the Dominion.

Mr. PETTIT moved the adoption of the report.

Mr. BOULTER seconded the adoption of the report.

The SECRETARY: This will be a dead letter until there is an inspector; but when there is an inspector whose business it is to seize and confiscate such fruit as is put up in a fraudulent manner, which is branded No. 1 when the barrels contain No. 2 or No. 3 apples, we shall expect to see some results of the position we are taking. However, I would approve of the report of the committee.

Mr. WHITE: This is a matter in which you ought to go slow. These recommendations ought to be printed and communicated to the members. It is a very serious thing to back out of a thing carried by a meeting. We should defer anything on a report of that kind asking change of legislation.

Mr. PETTIT: This is not a question of legislation at all; that is to come later on.

The SECRETARY: There is nothing in this but what we can heartily agree with.

The motion was carried.

COLD STORAGE IN FRUIT GROWING CENTRES.

Mr. A. H. PETTIT said: I received a copy of the programme but a very short time ago, with my name opposite this subject. I suppose the reason I was asked to deal with this question is that I have been giving the matter some little study, but I have not been able to arrive at the cost or anything to throw any light on that subject, but the point would appear to me like this: We are to-day in this Province of Ontario growing immense quantities of summer fruits. Of course at this cold season of the year it is not a very warm subject to discuss cold storage, but about July, August and September it would be a very pleasant subject to consider. Now, at that season of the year we have immense quantities of fruit as fine, I suppose, as grown in any country in the world. We find our own markets being well supplied at different seasons in the year with summer fruits. Now, why could we not, by establishing in local centres of fruit culture cold warehouses of some kind, make our country one continual summer of our choice summer fruits. The day of experiment I think in that direction is past. It has become an established fact I think, that we can keep almost any variety of our summer fruits over a certain period of time. Even our most perishable fruits might be kept a short time. Now, coming from a peach-growing section, I would illustrate one or two points in it which would be beneficial to our fruit growers. Take the one line of peaches alone, the early Crawfords, which are to-day the most largely grown in our section of the country in the peach line, and at that season of the year we place upon the market very large quantities, and the price is very much lower than that of many peaches of inferior quality simply for that reason. Now, if we can hold that market with cold storage even for a week or ten days, we can make a very large profit indeed. If we like we can hold our apples and summer pears, Bartletts, and those things, till the following summer, and we can have one continual flow of those summer fruits. Now, I do not wish to go too far upon this subject, because I have not had as much experience as someone else; but in the city of Chicago, where I spent last summer in charge of the Fruit Department of Ontario, I visited a great many of the cold storage warehouses. In the hot month of May and June, you could go into those warehouses and see thousands of barrels of Canadian apples—Northern Spys—in prime condition bringing splendid prices in that market. Now, I think fruit growers by combining to establish cold storage warehouses and hold their fruit, could realize double what they are receiving to-day by shipping them all within six weeks to all the markets both home and foreign. We could thus make our business more profitable and satisfactory in every respect. Prof. Craig has been conducting experiments this year on the keeping qualities of the different kinds of fruits, and I want to ask him to finish the subject, for I know that he can do it more justice than I can. I believe that this is the great question of the day with sections of the country where fruit growing is engaged in to a large extent. (Hear, hear, and applause.)

The PRESIDENT: Prof. Craig, we would be very glad indeed to hear from you on the same subject.

Prof. CRAIG: I cannot add very much to what Mr. Pettit has already said. He has addressed you from the grower's standpoint, and I will give you very briefly some results of experiment work which I have conducted along this line during this season. When at Chicago last year, this phase of fruit culture struck me as one of the lines which should be investigated in favor of the fruit grower of Ontario; and as soon as an opportunity occurred this season, when the fruits began to ripen, I made arrangements with a cold storage warehouse in Montreal—one of the best equipped of this kind that I know of—to ship there from time to time samples of our early summer apples. I began with Tetofsky, and continued taking in Duchess, Red Astrachan, Yellow Transparent and Wealthy and Colvert and so on, including a full list of the summer varieties as well as those less perishable of the fall kinds. I also included, just for information, some stone fruits, the early varieties of peaches, plums and pears, and fall pears. It is too soon yet to speak of results, that is their present condition in all cases which I have mentioned; but I can at this point state quite definitely that I have had negative results in some cases which speak for themselves. For instance, in the case of early peaches, Mountain Rose and Early Crawford keep very well for a period of about eighteen days, after being kept in a uniform temperature of 35. Now that, it seems to me, would tide over any difficulty which might arise in the peach season from a glutted market. At the same time our experiments show that this stone fruit cannot be kept even at that temperature for any length of time—a fortnight probably would be a safe outside limit; but our experiments only go this far, and too much weight should not be put on them. With regard to plums, our experience has been practically identical. We have been able to keep them a few days to over two weeks in good condition; after that a kind of deterioration in quality—not exactly a decay—set in, so that while a plum was fairly intact in regard to shape and form and solidity of flesh, it had lost flavor and could not be sold as a plum of good quality. With regard to the early apples I may say that I examined them personally about ten days ago and found the Tetofsky in perfect condition, just as good when put in the cold storage, with the quality as good as you could have it—and as you know it is a very perishable apple which does not usually keep a week when taken from the tree if taken when fully ripe. I put the Tetofsky in about the 28th July, and the others as they ripened afterwards at that time. The Duchess it is needless to say was also in perfect condition, and so were all the other apples. In conducting this experiment I had duplicate packages prepared, in one of which the fruit was wrapped separately in tissue paper, and in the other it was merely packed in a basket without any wrapping. Where there was ever any indication of rotting it was in the package in which the fruit was not wrapped. This was very apparent in the pears. The Bartletts and Flemish Beauties were in perfect condition when I examined them ten days ago, and only to-day I have received a letter from the manager of the Cold Storage Company in which he says, "Having examined all the stock I may say generally that that stock which has been kept in wooden packages, not in baskets, has kept best. For instance the pears in the small barrel marked 'Pettit' are in good shape, while the pears that are in baskets are not in such good condition, about five per cent. of these being wasted. All the apples are in No. 1 condition."

A DELEGATE: Have you any data as to the cost of cold storage?

Prof. CRAIG: I don't know how cheap a building could be put up that would answer the requirements of cold storage. I know this one where the experiments are being carried on for me is a very expensive one; the plant in it cost $35,000.

DELEGATE: It is something worth knowing about this cold storage when Tetofskys run down to 50c. or 40c. a barrel.

Mr. WHYTE: Wouldn't it be better to have these cold storage warehouses on the market, say at Toronto and Montreal?

Prof. CRAIG: I think if the fruit is kept at the right temperature no change takes place, and that when the fruit is taken out it will take the same time in the process of decay as it would originally. I think it will keep just as long as it should after the fruit has been picked before it is thoroughly matured on the tree. It would be an advantage

to have the cold storage at the shipping point so that the fruit could be transferred without the possibility of a great change of temperature for any length of time.

Mr. A. H. PETTIT: I had apples on our table at the World's Fair for no less than six weeks after they came out of the cold storage, and that was in a very warm room, under glass you may say. New York State had apples for more than six weeks on their table after coming out of the cold storage. The course we took after taking them out of a temperature of 34 was to put them in a room that is just moderately warm, and there let the evaporation take place and the moisture pass off, and they seemed to keep splendidly. I was always opposed to cold storage on the ground that they would decay more rapidly, but experience tells us that they will not—they will keep exceedingly well if carefully taken out.

Mr. BOULTER: Has this Association any plans of a cold storage whereby any member could get information? I expect to build a cold storage in Toronto next summer and would like to get some information.

The PRESIDENT: I think there have been plans published in the "Horticulturist."

Prof. CRAIG: Not of the kind that we are discussing here.

Mr. BOULTER: I think it would be very beneficial if our "Horticulturist" could print or disseminate plans whereby members of the society could build small storage warehouses in different localities, because I believe that cold storage could be adopted in centres where it seems now almost impossible. I have lost thousands of dollars by not having cold storage for strawberries.

Mr. A. H. PETTIT: The only process I have seen has been a chemical process, and that can be regulated I think very much better than we can any ice storage.

Mr. MCNEILL: I have had a little experience in cold storage. I saw the construction of one and lived within thirty feet of it for eight years, and saw the workings of it during that time, in and out of it all the time, closely connected with some business that was going on there. This cold storage room was built by a dealer in butter and eggs and general produce for his own use. It had double walls on the outside with building paper between; two doors on the inside with paper between; and simply scantling, I think it was 2x10, between those. That is all the protection he had. It was not quite sufficient, but still it would keep out frost in the winter during the time he didn't have it with ice in. The building was very strong. It was about 30x50 feet. It was cooled with ice. A very substantial floor was put on it. It was a low cellar, then another chamber above that, and finally the ice up above arranged in a cage properly supported below, so that the ice was three feet from each wall, and there was over one hundred tons of ice placed up there during the winter. There was a strong circulation of air that went down over the sides of the ice. You could feel it and notice it with a candle or any flame. The cold air was constantly falling from above down those sides to the cold storage room below, and that was regulated with openings that you could let in a draft of cold air or you could turn it off. That was sufficient to keep the chambers below at the temperature he required, though the temperature was not kept below 40. There were several little practical details, such as the condensation of moisture in the lower room that he had to provide for by a series of zinc plates and so on; but the general principle was that of separating the ice on a frame about three feet from the wall with spaces that could be opened or closed for the cold air to descend to the chamber below, and there was provision made for the warm air coming up, and thus a circulation was kept up. It worked well for his purpose, but of course fruit was not thought of at that time. It was in Windsor.

Mr. HARTMAN: A year ago I read in a paper that somebody had applied for a patent on cold storage and used snow instead of ice. I noticed that in the Blue Mountains, in the clefts of the rock, you find a little snow and very little ice, and I wondered whether snow would be practicable.

Prof. CRAIG: I think we will have to adopt a system that will bring the temperature down to the freezing point, and the sooner we get to that the more perfect will

be the condition of the fruit. The basket package is not the form for cold storage. It should be in a box that holds fifty to seventy-five pears, in proportion to their size. In every case the fruit which is put up in packages of that character kept much better and was handled with greater satisfaction and packed better in the storage rooms. In Montreal, in this storage warehouse that I referred to, they have about forty rooms, each 20x30, and those rooms are double-walled, and the square packages, or packages of the parallelogram shape, pack much better in those than in any basket form, and the fruit is much less liable to be damaged.

Mr. WHYTE : I think it would be advisable if our editor would get a proper account of such a building and publish it in the "Horticulturist." We cannot discuss questions of that kind here to any advantage.

Mr. BOULTER : Probably there is nothing of more importance to this society at the present time, and I would suggest that a committee be appointed to get all the information they possibly could in regard to it and have it published in the "Horticulturist." I believe some scheme could be devised that would be feasible in certain localities, and not come at such an unreasonable price as the figures we have had.

The CHAIRMAN (Mr. Wellington) : The secretary will take it in hand and do what he can and publish it in the journal, and probably Prof. Craig will kindly assist him in the matter.

Prof. BEACH : I am acquainted with a gentleman who lives on the Hudson River who has what he calls a cold room constructed very much on the plan of that just described by Mr. McNeill. He uses it for holding back the peaches for a few days—not more than ten days, sometimes not so long as that—and he sorts them out as he wants them and ships them immediately to New York ; but he lives so near New York that he can put them on the night-boat and have them there in the morning. I may be wrong in my impression, but I have an impression that the experience of the gentlemen who have had most to do with cold storage in that part of the country is that perishable fruits do not stand up well after they come out of the storage, and for that reason it would be best to have the storage in the market centres.

Prof. CRAIG : What kind of storage ?

Prof. BEACH : Any kind, after they have been kept back for a period of time in that cold temperature ; we know that frequently they do go down rapidly.

NOTES OF TRAVEL AMONG ONTARIO FRUIT GROWERS.

Prof. H. L. HUTT, of the Ontario Agricultural College, Guelph, said : In my account last year at Peterboro', perhaps I pictured rather highly some sights I saw among our American cousins. At any rate some of our members criticized me for booming American orchards and vineyards. Well, I will assure you that if I did so it was not to drive any of our Canadians across the line, but rather to stir us up to better things, to hold that up as an object lesson to us in certain respects that we might profit by it. Consequently, to-day I am on the programme for some notes of travel among Canadian fruit growers. No one is more assured of what we can do in this Ontario of ours than I am. I believe that with such varied climates and conditions we can produce some of the finest fruit and of the best quality and in great quantity. I have had the privilege this summer of travelling considerably over the province. Starting in the Niagara district near the Falls, we have what many of those who live there consider the garden of Ontario. In the vicinity of the Falls you will find acres and acres of large peach orchards and vineyards. It is a treat to anyone who is not used to that sort of thing to see the fine vineyards and orchards in that section. One which I have always enjoyed visiting is the fruit farm of Mr. E. Morden, who is a member of our Association. That is a place where you will see much in little. Mr. Morden is a thorough cultivator, and his fruit farm and nursery of thirty or forty acres is well tilled and filled with fruits of all kinds that can be grown there. Many others might be cited in that same district. It was my priv-

ilege also to visit some fine orchards and vineyards in the vicinity of St. Catharines. I went out one afternoon with Mr. Edward McCardle, who has four or five farms in that vicinity. On the Kottmeier farm he has one of the largest peach orchards I have visited. The crop of peaches was enormous, and his vineyards were loaded. Another farm of his known as the Martindale farm, is given entirely to peaches—15 or 20 acres—and at the time of my visit the trees were heavily loaded. Near there we made a visit to Mr. Barnes, who is one of the largest wine makers. At Grimsby we have the great fruit section. Grimsby has an enviable reputation as a fruit centre. It will be impossible for me to speak of all the fruit farms, but I cannot overlook that of our worthy secretary, Mr. Woolverton, who has a farm of 100 acres all in fruit, which is in itself a great experiment station. He has a greater variety of fruit than probably can be found in any one farm. It is one of the places Mr. James spoke of last night as having palatial houses and all the surroundings. Major Allan has a large plum orchard that at the time of our visit was heavily loaded with plums. Collingwood section has plums to a great extent, but in the Niagara district they grow plums that would astonish many of us Around Winona we could not overlook the farm of Murray Pettit, one of our experimenters in grapes. His vineyards, about 30 acres in extent, include some thirty varieties of grapes, and he has quite a lot of pears and plum trees as well. Going a little farther west I might mention the nurseries of E. D. Smith, which are quite extensive, and he has a lot of very fine nursery stock there at the present time. On the farm of Mr. D. Tweedle, next neighbor to Mr. Orr, I found a stock of the finest plum trees I have seen growing even in any of the American nurseries. I should not have forgotten to mention the Fonthill nurseries of Messrs. Morris & Wellington which cover several hundred acres of land; so it is not necessary for Canadians to go out of their own country to get all the nursery stock of good quality that could be desired. At Stony Creek I was much interested in the visit to the fruit farm of Mr. Orr. He believes that what is worth doing is worth well, and we found things there kept in first-class condition. I think he has about 90 acres of land, and 30 of that is in fruit, about 50 acres in vineyard, and 800 or 900 plum trees, 1,000 or 1,200 pear trees These orchards and vineyards are something that growers in that vicinity may feel proud of. Of course it is almost impossible to do justice to a section like that by mentioning only a few of them, but that is all we have time to speak of at present. Making now a long jump as far as Chatham, I was privileged to visit one of the large orchards owned by Mr. Dolson. He has a very large apple orchard of some 40 acres—some large old trees, fully as large as any we will find in the Grimsby section, not excepting those of Mr. E. J. Woolverton, of which we saw photographs yesterday. Coming into Essex county we have one of the great fruit growing sections. In South Essex we have a great peach section. Mr. Hilborn is right in the centre of that peach growing section. He has about 60 acres of peaches, probably as fine a peach orchard as you would find almost anywhere. He has about 6 acres of strawberries and about 100 different varieties growing. His next neighbor has also 50 acres of a peach orchard, newly set out; so you see in that vicinity they are going extensively into peaches. Their land is admirably adapted for it, and they know it. His neighbor on the other side, Mr. John Mitchell, has another good example of "a little farm well-tilled." Mr. Mitchell has about 25 or 30 acres in fruit, and has probably one of the best-kept fruit farms that we will find anywhere in the province. I spoke last year of the shortening-in method of pruning adopted in some orchards about Geneva by Maxwell Bros. Mr. Mitchell adopts that method of shortening-in the wood every year, so that his trees are compact, symmetrical, close-headed as any we will find in the province. Next neighbor to him we have the large peach orchard of Mr. Tyehurst—over 70 acres of peaches, most of them in bearing, among them a great many of what are spoken of as Tyehurst Seedling. Then in North Essex we have the great grape section. In Walkerville, where Mr. McNeill lives, we have large vineyards. Mr. McNeill has two large vineyards, in all about 50 acres of grape. His next neighbor to him, Mr. Montreuil, has about 30 acres. Then we take as circle, going around up in Huron, where it was my privilege a couple of years ago to visit some orchards. I don't remember anything quite so extensive, but nearly every farmer there has a small orchard of some extent, apples being the principal fruit.

Then coming north into the Beaver Valley, it is needless for me to say anything more than what has been already said. That valley is certainly a great plum-growing section, and we expect to hear more from them along that line. I visited the fruit farm of our friend, Mr. Caston, at Craighurst As we all know, he is an enthusiast in fruit-growing, and if peaches do not succeed in Simcoe it will not be his fault; if they could grow there he would have them. But Mr. Caston is an enthusiastic experimenter, and has given a great deal of attention to growing all the varieties of fruit that can be grown in that section He has already tested a great number of varieties of Russian apples Taking a hurried run across the province down to Trenton, it was my privilege, along with Mr. Woolverton, to visit the Bay of Quinte district, and particularly the orchards of Mr. Dempsey, who has about 40 acres of apples closely planted and in bearing It was a sight to see those orchards along in September. I never saw anything growing like his Snow apples and Ontarios—loaded to the ground. It was a revelation to me as to what they could do in apple growing in that section. Of course that is the great apple section, but I had no idea that they could produce fruit so abundant and of so good a quality as they have in that part. Mr. Dempsey has most of his pears across the Bay of Quinte in Prince Edward county, and I was pleased to notice that much-spoken-of Dempsey pear. I saw the original tree from which all the stock of that variety had been taken. Coming west we visited other orchards near Oshawa and Whitby. I will close by mentioning some things that we should observe if we are to hold our own and keep in the front rank as fruit growers. In the first place I think we must give more attention to the selection of suitable soil for the different varieties which we plant. I received a communication this spring from a grower in the Niagara district, saying that some disease had struck his grapes—that all the grapes in the centre portion of his vineyard were being affected by a disease that acted like black-knot, and it was spreading rapidly, and he was afraid it was going to clear out his whole vineyard. It was my privilege to visit that part not long after, and I found in that vineyard the trouble that is sometimes spoken of as black-knot on grapes. This all occurred at one end of the vineyard, which was in a low piece of ground. That is known not to be a fungous disease at all, but simply an abnormal growth owing to unsuitable conditions. This soil was too low and brought about this abnormal growth on the vines. In putting out trees or vines or plants of any kind we should always look to get them on the best and most suitable soil. Plums and pears we generally give the heaviest soil; grapes we always give well-drained soil. If there is one fruit above another that we can put on a moist soil it would probably be the currant or gooseberry. Peaches of course require the driest and lightest, but peaches on not too heavy soil will do fairly well, and are not so liable to attacks of insects as those on the light soil. Another point I think we do not observe as thoroughly as we might is the arrangement of our trees in orchards. I think we should give more attention to planting trees on the hexagonal plan. Nearly all the orchards we find are planted on the square—a very convenient method—but the hexagonal plan has the great advantage that we can get so many more trees to the acre without crowding than we can on the square. The honey bee makes use of that plan, in building his comb, which is built in hexagonal shape; in that way he can get in so many more cells to the square foot than in any other shape. If we adopt the same plan in our orchards we can get in many more trees to the acre. Taking apple trees 30 feet apart, we could get six more trees to the acre on the hexagonal plan than on the square; taking plum trees 10 feet apart we can get 25 more trees to the acre. This counts up quite a bit when we come to plant an orchard of any size. Then the question of cultivation is one that is often discussed, and I think there is not enough attention paid to it. The majority of our fruit growers do not give proper cultivation. There are too many of our orchards in sod. We cannot keep orchards continually in sod and expect them to do well. Sod should never be allowed in a young orchard. Trees should be cultivated till they come into bearing. Sod should only be allowed in a young orchard where the tree is growing so luxuriantly that there is a tendency to wood rather than fruit. This wood growth can be checked by sodding them down for a couple of years, but as soon as they receive their growth they should be cultivated. I am not in favor of plowing an orchard. If I had

my way I would do as I have done for a number of years at home—that is cultivate orchards without plowing at all. In plowing deeply in the orchard, or plowing at all, we disturb the roots more or less, and by keeping up a good system of cultivation by the use of the spring-tooth cultivator and broad share cultivator it is possible to keep the weeds down and never have to have a plow in them from one year's end to the other. Of course where land is so flat that it needs drainage, there is some excuse for plowing. I know Prof. Bailey advocates plowing, in order to stand drouth in the dry season. I believe we should give deep cultivation when we set out the orchards, but I think it is not natural to try and drive the roots down afterwards into the hard subsoil by deep plowing on top. Then the fourth point is we must adopt more effective measures of fighting insects and fungous diseases. We must become more familiar with our minute foes. There are two little books I would like to recommend to all fruit growers. One is "Fungi and Fungicides," by C. M. Weed. It is one of the latest up-to-date publications on the fungi; I think the price of that is $1.25; and another by the same author, "Insects and Insecticides." In these two little books we would get enough for the general run of fruit growers to be thoroughly posted in those minute foes that trouble our fruit plantations. We have that admirable work by Prof. Saunders, "Insects Injurious to Fruits." For descriptions of insects there is probably nothing that will equal that, but that has not been revised since the greater information in regard to spraying has been introduced. Then I think we must give a little more attention to the adoption of preventive measures for fungi. If each county or township which grows peaches or plums would enact and enforce the Black-knot and Peach Yellows By-law we would help to rid our land of these two troublesome diseases. I visited this year quite a number of peach orchards in the Niagara section which were being taken off rapidly with the peach yellows. Now, unless we follow that up and destroy the trees wherever this disease appears, unless we cut off our black-knot wherever we find it, we are not going to be rid of those diseases. I think each township should see that the by-law is enforced by means of inspectors. Then, there is just one other point, and that is, we want more fruit growers to practice thinning of fruit. There are too many of us who allow all the thinning to be done by the insects and by those fungous diseases—and they are not safe hands to leave the job to. Where we carry on spraying as it should be done on trees, we will find they will be fairly well loaded; and where trees are heavily loaded it is always advisable to thin out the fruit when it is small. Any of you who grow fruit for exhibition will understand what this means. That is how we get the fine specimens for fairs. Over-bearing not only injures the quality of the fruit, but it injures the vitality of the tree. It will only bear in alternate years, or probably bear for a few years and then stop altogether. If by thinning out there we thin out a number of seeds, we throw all the energies of the tree into the fewer apples left, and the production of pulp is much less drain on the tree than the production of seeds. So we can increase the apples to almost double the size, and increase the value of the fruit. (Applause.)

QUESTION BUDGET.

The Chairman read the following questions and answers that had been submitted:

1. What are the ingredients and proportions of the Bordeaux mixture? A. 4 lb. lime, 4 lb. copper sulphate, 1 bbl. water.

Prof. FLETCHER: Wouldn't it be well to mention that there is another formula: "6 lb. copper sulphate, 4 lb. lime and 22 or 45 gals. of water." This is a stronger mixture.

Prof. BEACH: For potatoes the stronger formula is better, but for fruit trees the formula you have given is all right.

2. May the Bordeaux mixture be used on grapes, currants, gooseberries and roses? A. Yes.

3. How often should apple trees be sprayed with Bordeaux mixture, and when? A. First application copper sulphate. One application before blossoming, and three afterwards at intervals of ten days to two weeks.

4. Will Bordeaux mixture destroy the insect that rolls the leaf on the Guelder rose or Snow Ball? A. Add Paris green.

Mr. BEADLE: What insect is that that is alluded to? There is more than one insect that goes after the Guelder rose.

Mr. WELLINGTON: Is it simply the green aphis?

DELEGATE: No, it is a black aphis.

Prof. FLETCHER: The insect which does the most harm to the Guelder rose in one generation appears green and the other with dark marks on the body, and it can be treated satisfactorily by spraying the bushes before the leaves open, when the twigs are covered with the eggs, with the kerosene emulsion.

Prof. BEACH: What strength would you use the kerosene emulsion at that time?

Prof. FLETCHER: The ordinary Riley-Hubbard mixture diluted with nine times the quantity of water.

Mr. WELLINGTON: The next question is, will it kill the bark louse? That question, I presume, is answered by your reply to the former question.

Prof. FLETCHER: Yes, sir; I think the best remedy undoubtedly is kerosene emulsion applied just before the buds open, or later.

Mr. WELLINGTON: The next question is, is there anything to destroy the scale on house plants?

Prof. FLETCHER: House plants are generally grown in sufficiently small quantities to make it practicable to wash them with soap, and that I think under all circumstances is the best treatment. If a sufficient number of plants are grown to use a mixture, a mixture of kerosene emulsion might be used quite satisfactorily. The scale on house plants I presume is the one that is common on the oleander and orange, and plants of that nature. The Riley-Hubbard formula is twice the quantity of coal-oil to soap-suds, and the soap-suds are made by dissolving half a pound of soap in one gallon of water. That is mixed with twice this quantity of coal oil, and you have then a standard emulsion, and with this you take either nine or twelve parts of water for application. For house plants twelve parts would be sufficient, because in a small plant you can apply it very thoroughly and see that every scale is touched. For application with larger quantities or large trees it is generally used in water nine times the quantity. For the Mealy bug a remedy is a small quantity of pure alcohol put on by a paint brush. The kerosene emulsion is good too.

Mr. WELLINGTON: Another question is, is it advisable to have holes bored in the apple barrels or to have the apples separately wrapped in paper?

Mr. A. H. PETTIT: The experiments which we have gone through in that respect when we shipped to Chicago were made in kegs lined with paper and the specimens wrapped in tissue paper. The gentlemen who kept the cold storage said they would not keep in that condition—the papers must come off and they must be put in the kegs. Our experience proved that this advice was not good.

The SECRETARY: The New York people didn't allow theirs to be unpacked and they came out in better condition than ours.

8. Which is best for apple trees, stable manure or wood ashes, and when should it be applied? A. Stable manure and wood ashes alternated in the spring.

9. At what temperature should apples be kept? A. About 33° Fahr.

SCORE CARDS.

Mr. A. H. PETTIT read the following report of the Committee on this subject and moved its adoption.

Prof. CRAIG seconded the motion.

Mr. MORTON: In adopting this report, do we commit ourselves to the values that are placed there? I approve of the system but I disapprove of some of the values on some things. Acting as a judge at fairs as I do very often, I would respectfully decline to follow some of the values, though I approve of the principle, and have for some years followed the system of judging by points.

The SECRETARY: If any gentleman wishes to amend the values, the Association will consider them at any time.

The CHAIRMAN: I don't think the values are fixed for good and all. They can be changed at any time, but it is questionable whether it is advisable now to deal with that. I do not think that adopting this report really commits any man to follow out these values. The Association as a whole, or this meeting, would be committed to the values that have been decided on for one year simply.

Mr. MORTON: We have here, for instance, a score card for "Collection of Apples." This card only proposes to add a maximum of ten for the quality and ten for covering the season. I think a good deal of importance should be attached to the fact that a variety of apples cover the season, and ten is altogether too small a number to be allowed out of a maximum of 490 points. It is proposed to give a maximum of ten points when we are judging apples and pears for cooking, the maximum of which is only ten for each individual species. For instance, ten varieties are shown which would aggregate a maximum of 120. In the one case it is only proposed to add ten for covering the season. In the other case, where it would aggregate 480, ten is also to be given. I think that less should be added for a collection of six varieties than if there were twelve or twenty-five. I think there should be a certain number added according to the number of varieties. If you were judging six varieties add twelve points; for twelve varieties add twenty-four.

The SECRETARY: If that was in the form of an amendment I am not sure but we would be willing to adopt it.

Mr. MORTON: I would prefer that the report be referred back to the Committee, because probably that is a point that they didn't give consideration to. I suppose the same thing would probably apply to pears. I am speaking solely with regard to judging on apples; I am not a judge on grapes and do not pretend to be.

The CHAIRMAN: Will the Committee act on this suggestion and defer bringing in the report till some time this evening and consider this matter? then we will receive the report and if necessary discuss it.

Mr. PETTIT: The Committee will accept that.

REPORT ON FRUIT EXHIBIT.

Prof. CRAIG read the report of the committee on Fruit Exhibit at this convention, remarking that the local organization deserved great credit for the efforts they had made to give such a fine display of fruit. On his motion, seconded by the Secretary, the report was adopted as follows:

Your committee have to report that at the fruit exhibit at the winter meeting of the Ontario Fruit Growers' Association held at Orillia, on Dec. 5, 1894, the display of apples was one of the finest ever shown at a winter meeting of the society. The collection of local fruit shown by the Orillia Horticultural Society was exceedingly creditable and

demonstrated that apples grown in the vicinity of Orillia reach a high state of excellence, and in point of coloring, size and flavor are unsurpassed by any in the province.

This collection comprised eleven varieties of fall apples and twenty-one kinds of winter apples, most of which were first and second prize plates preserved from the township exhibition.

Among varieties which stand out prominently on account of fine appearance and perfect development the following may be mentioned :

Fallawater, Pewaukee, Wealthy, Hurlbut, Fameuse, Mann, Ontario and Wagener. Fameuse and Wealthy as grown in this locality attain large size and take on a high color.

Among the newer varieties may be mentioned an attractive plate of Longfield, which has already been mentioned in the report on new fruits. This tree is reported as prolific and hardy.

Mr. Robert Willis, Orillia, exhibits nine varieties comprising winter sorts including fine plates of Wealthy, Pewaukee and Mann, which received first awards at the township exhibition.

Mr. J. H. Tool, of Orillia, also shows nine varieties prominent among which are Wagener, Wealthy and Pewaukee. Mr. Tool secured sweepstakes prize on collection of six varieties at the county exhibition.

A collection of fall and winter varieties shown by J. W. Wainman, of Orillia, is worthy of mention and instructive from a local standpoint.

Seedling Apples.

A number of seedlings of Duchess were shown, exhibiting great variation, but not promising in appearance or quality. No other seedlings in this collection were considered worthy of special mention.

A seedling white grape shown by Rev. Geo. Williams closely resembles Jessica in appearance and quality.

In collection of apples by W. H. Dempsey, Trenton, Ont., are included a number of interesting varieties of European parentage.

Ontario is shown of good size and fine appearance. A fact which has been already noted in regard to fall and winter types of Blenheim Pippins is brought out by both varieties being exhibited. The fall type is much larger, with more color and fully six weeks earlier than the other.

A collection of sixteen varieties of Russian and hardy apples is shown by the Central Experimental Farm. Prominent among them are Arabka, Canada Baldwin, Scott's Winter and Gideon.

Thos. Beall, of Lindsay, shows fine specimens of Ontario, and a number of varieties without name.

Collection exhibited by W. S. Turner from Stormont county is worthy of mention. Fine plates of Gideon and McIntosh Red are shown.

Wm. Cornish, Little Britain, shows ten varieties of apples, mostly winter, all in good condition.

Mr. Wellington Fisher, of Orillia township, exhibited a collection of the newer varieties of apples well adapted to cultivation in this locality. A number of these were prize winners at the county exhibition.

J. C. Wilson shows four winter varieties.

W. H. Leif, Orillia, shows three varieties of apples all beautifully clean as an object lesson of the benefits of spraying.

Wilson Arnot, Trenton, Ontario, sends a collection of eleven varieties of apples, each made up of remarkably fine specimens.

An unusually fine sample of Ben Davis were shown.

Kings and Northern Spys are also exceedingly fine in regard to flavor and coloring.

D. Galloway, More Falls, Ontario, sends two seedling apples which are not of sufficient merit to be recommended.

Mr. DeHart shows six varieties of apples including seedlings and named kinds.

W. M. Robson, Lindsay, Ont., exhibits five varieties of apples among which was Magog Red Streak, which may be described as follows: medium large, roundish conical, deep golden yellow with slight blush, stem rather long and strong, flesh white, firm, fine grained, sub-acid, quality medium to good, most valuable for the north.

Pears.

The collection of pears was small.

A. M. Smith shows Lawrence of characteristic fine quality, Keiffer and Anjou.

T. H. Race, Mitchell, Ontario, shows a large pear said to be of seedling origin; at this date quite unripe.

Linus Woolverton exhibits a Russian pear called Medviedka, small size, pyriform, quality medium, with some astringency. The tree being hardy this variety may have value at the north and should not be lost sight of.

W. M. Robson shows a plate of Josephine de Malines in good condition.

Grapes.

W. M. Orr, Stony Creek, Ont., shows characteristically fine samples of Vergennes in a perfect state of preservation, which further emphasizes the value of this variety as winter grapes.

Murray Pettit, Winona, Ont., exhibits twenty-four varieties, including black, red and white. Among the newer varieties your committee noted Anderson. A black grape; bunch medium, not shouldered; berry, large round; skin thick; pulp melting; seeds large; quality good.

Early Dawn is a small black bunch and berry, not promising.

Among red ones excellent in quality are Essex, Agawam, Salem and Goethe; of white, Lady Washington, Niagara and Duchess; black, Herbert, Barry, Wilder and Aminia are noticeble. This exhibit should be highly commended on account of its educational value.

Catawbas in a well-ripened condition were also shown.

Linus Woolverton, Grimsby, Ont., shows twenty varieties.

Victoria, a white variety, bunch and berry medium size, commends itself as an amateur variety on account of quality.

Triumph, white, as shown is of poor quality, late, and cannot be commended.

Noah, white, appears to be worthless on account of poor quality, and liability to be affected by mildew.

The committee wish to express their appreciation of the efforts of the local committee in making arrangements for and getting together such a beautiful display of locally grown fruit.

Committee { W. H. Dempsey, (Chairman.) J. H. Tool. W. E. Wellington. John Craig.

The meeting adjourned at five o'clock.

SECOND DAY—EVENING SESSION.

The President asked the Secretary to read his paper on the Inspection of Fruit, in answer to question 14. Shall we Drop Fruit Inspection or Push it Forward?

The Secretary read his paper as follows:

FRUIT INSPECTION.

The codling moth must be routed from Ontario orchards and our shippers must exert themselves more faithfully in spraying with Paris green which is the best-known

means of exterminating it. In packing, all wormy apples should be sold at home or fed to stock and never shipped to distant markets, or else the results will prove most disastrous to our Canadian export trade. Recently a carload of apples has been seized in British Columbia by the fruit inspector of that province and ordered to be destroyed because they were found to be infested with this moth. This is in accordance with one of the laws of British Columbia. The section reads—"All persons possessing, forwarding or distributing trees, plants nursery, stock or fruit infested with any insects, such as woolly aphis, apple tree aphis, scaly bark louse, oyster shell louse, San Jose scale, red scaler, borers, currant worms or other known injurious insects, shall have the same disinfected and cleansed of such insects before forwarding, distributing selling or disposing, of said plants or fruits.

Here is the clipping from the *Daily Globe* of Friday, November 2nd in reference to the seizure of these apples.

Mr. Bosworth, assistant freight traffic manager of of the C.P.R. received the following despatch yesterday; "British Columbia Government fruit inspector is condemning apples shipped from Ontario on account of their being infested by a larvae of the codling moth, and he is insisting that a carload of apples now there shall be destroyed by fire. Unless shippers are careful in filling orders for British Columbia market to see that the fruit is free from infection of this kind, serious loss will result. Inquiry by the Globe among the fruit dealers of this city failed to reveal any cause of such alarm as is suggested by the despatch. There is no prevalence of the codling moth this year and the shipment in question they think must have been of fruit poorly handled, if it was not made up of windfalls."

There is no doubt much carelessness in the management of our orchards by some growers and consequently their fruit is badly infested with the codling moth. I know of an instance where one-third of a man's whole crop of apples was infected with the larvae of the codling moth above referred to. But this state of affairs can be largely remedied. Sheep or pigs in the orchard will eat all the wormy fruit as it falls, hay bands will catch them, spraying will poison them and careful sorting will prevent any of them being exported.

Would it not be well for growers of first class-fruit to be all agreed together that they will pack only stock which is free from worms, and graded according to our No 1 and No. 2 classes which have already been described in the, Canadian Horticulturist, and incorporated in the Dominion Inspection Act, and hand in their names to the editor for publication under a special heading in the advertising columns. Such a list would not need to cost each grower more than ten cents per month, and circulating, as it does among the leading fruit merchants of Canada, United States and Great Britain, would tend to bring our best growers into connection with our best buyers.

The desire for an inspector of apples is widespread, not only among fruit growers themselves, but also among apple merchants. In proof of this I give you here an extract from the "*Fruit Trade Journal*" published in New York.

"Many Canadian merchants are complaining of the swindling operation of some packers who top off barrels of apples with one or two good layers, and the balance with culls. There is talk of having the Legislature take up the matter and appoint an inspector. Leading fruit men of Ottawa have been interviewed by the "Free Press" as follows:

Mr. H. A. BROUSE said: "Yes I certainly am in favor of a scheme of Government inspection. The loss is something terrible, but we have adopted a remedy for our financial loss, though the annoyance and trouble cannot be repaid. We buy our goods in a way that we deduct so much for loss or deteriorated quality, but even then the evil is not avoided. We are annoyed by mixed barrels and fraudulent branding. It is impossible when getting in hundreds of barrels to examine them all and we often run against a badly packed barrel."

BATE & Co. said: "Yes we are certainly in favor of an inspector. It is a long standing complaint and a serious loss and cannot be remedied too soon."

KAVANAGH BROS. said: "This bad packing of fruit is a perfect nuisance and a matter of a great loss. Certainly a fruit inspector should be appointed at once."

The Montreal *Trade Bulletin* of the 23rd contains the following article on Apple Inspection:

"The present season has demonstrated the necessity of an inspection for apples, large quantities of inferior fruit having been shipped to the English market that never should have good forward. An inspection law, providing for the inspection of apples, would be the means of doing away with a great deal of miscellaneous consignment business now going on, as many buyers on the other side would prefer to buy either on a f.o.b. price here or a c.i.f. basis on the other side, if they were sure of the quality we were getting. An inspector's certificate would greatly facilitate the export trade in apples, while it would be the means of preventing the large quantities of poor fruit which find their way over to the other side, to the great detriment of the prestige of Canadian produce. The writer has mentioned the subject to several leading men in the export trade, and they are of opinion that steps should be taken, in order, if possible, to secure a proper system of apple inspection, especially as the trade is increasing so rapidly."

The question now before us is—Is apple inspection practicable or impracticable, and if practicable, how? Perhaps our previous plan was impracticable. No man is willing to undertake the work of apple inspection on the mere chance of getting now and then a car load of apples to inspect at ten cents a barrel, nor is any man willing to become responsible for the marking of a grade of apples in carload lots and thus assuming the responsibility of saying that the whole are No. 1 grade, but he can condemn such lots as he finds to be packed in a fraudulent manner.

I propose the employment of an expert fruit inspector by the Dominion who shall be paid a liberal salary and whose business it shall be, (1) in the spring to inspect fruit trees and vines that are being imported and thus prevent the introduction of fungous diseases and injurious insects; (2) in the month of June or July and August it be his duty to enforce the plum knot act and the destruction of peach yellows, and (3) from September to March to inspect such shipments of apples as it may be possible for him in order to prevent as far as he can, the shipment of any fruit that is fraudulently packed, or which is infected with codling moth or apple scab. Also any apples found to be inferior to the brand under which they are shipped, he shall cause the brand to be erased from those barrels. To the same man appeal could be made by either buyers or sellers in the case of a dispute as to whether a certain lot of apples which had been purchased was up to the grade marked upon them. He should also be empowered to give an inspector's certificate of grade to any lot of apples for export, on certain conditions, thus facilitating sales f.o.b.

Certainly the grades should be clearly defined, and then as much publicity as possible should be given to them, in order that they may becomes a convenient basis of bargains and sales between distant parties.

I move that after a full discussion on this subject, a committee be appointed by the president to take this matter into consideration and report at this meeting.

The SECRETARY moved that a committee be appointed by the President to take this matter into consideration, and to bring in some resolution giving the views of the association on the subject.

Mr. CASTON: As the subject matter of this paper is the same as one that was dealt with by a committee this afternoon, I move that it be referred to A. H. Pettit, Mr. Boulter, Mr. Fisher, Mr. Dempsey of Trenton, and the mover.

The SECRETARY seconded the motion which was carried.

SCORE CARDS.

Mr. A. H. PETTIT brought in revised report of committee, which was adopted as follows :

We, your committee, beg leave to report that having consideredthe advisability of awarding prizes at our exhibitions by a scale of points, as submitted by the Secretary, we would recommend the adoption af the score cards, with the amendment that in awarding the points for "Covering the Season" in collections, the maximum be computed on a basis of five points for each variety shown in such collection.

Committee { A. H. PETTIT. T. H. RACE. M. PETTIT.

COLLECTIONS OF APPLES.

Mr. A. H. PETTIT moved the following resolution regarding offering prizes for apples for export.

Mr. BEALL seconded the resolution which was carried.

"That in the opinion of this Association the offering of awards on large collections of varieties of apples at our exhibitions is not productive of profitable results, but in lieu thereof prizes should be offered for the best collection for export."

EXPERIMENTS IN SPRAYING.

Mr. A. H. PETTIT moved a resolution in reference to spraying experiments by Prof. Craig, which was seconded by Mr. Beall and carried heartily.

Resolved, That we the officers and members of the Fruit Growers' Association of Ontario, desire to express our warmest thanks to the Hon. A. R. Angers, Minister of Agriculture for the Dominion, for the prompt manner in which he acceeded to the request of this association, in placing the able services of Prof. Craig at their disposal, to conduct the spraying operations for the destruction of fungi and insect pests, and we wish further to express our appreciation of the thorough and energetic manner in which Prof. Craig carried to a successful issue experiments which are of the utmost importance to the profitable cultivation of fruits in this province, and that the secretary be instructed to forward a copy of this resolution to the Hon. the Minister of Agriculture.

THE CODLING MOTH AND PLUM CURCULIO.

Prof. JAS. FLETCHER, Entomologist, Central Experimental Farm, Ottawa, said : "The plum curculio in its perfect state is a small beetle, and having studied out the life history of this insect we are able to get at the remedy. There is only one brood in the year. With some insects there are two or three broods. It is very important to find out the life history of an insect before we can begin to fight against it.

The plum curculio passes the winter as a perfect beetle. Knowing this we can understand how a remedy can be efficacious which at first sight would hardly appear to be so. The beetle in its perfect state comes out as soon as spring opens, and is in an active condition then to injure any of its food plants. Its food plants are of the plum and cherry families. It was found out twenty-five years ago by Prof. Riley, of Washington, that the perfect beetles feed not only on the new leaves when they first open out, but also upon the young twigs of the trees, the bark of the young twigs. Experience has shown us that an efficacious remedy—not perfectly efficacious, but sufficiently so to make it a paying and practical remedy—is the spraying of our trees with one of the arsenical pois-

ons, the most convenient of which is Paris green. Now, it was hard to understand how an insect which as far as most people knew only ate a small portion of the plum which was sufficient for it to lay its egg, could be poisoned by this remedy, but we find that it feeds on a larger quantity of the plant than that, for it feeds on the young leaves and also on the bark of the young twigs. With regard to the laying of the egg of the plum curculio, the statement has been made that this is affected by the poison which we spray on to our trees; but this is not the case, because the egg of the plum curculio is never at all exposed or in such a position that it can be affected by that poison. The *modus operandi* is this: the beetle settles on the fruit which it is going to puncture and injure. It often bites round a crescent-shaped channel in the side of the fruit, and lives in that way inside the crescent or flap-like portion of the fruit. It then lays an egg by burying the egg into that flap and inserting the egg and pushing it right down to the bottom of it by means of its beak, so that the egg is never exposed and cannot be affected by poison. The only good, then, in its application is that the insects in eating the leaves and the small portion of the fruit which they cut out in cutting out that channel, are subject to a certain portion of that application. Now, we do not know that this Paris green may not also have a deterrent effect in keeping the insects away from the trees altogether. We only know that good results are obtained by spraying the trees in the spring for the plum curculio. There is no necessity, nor would there be any good in repeating that spraying after the eggs are laid, but it sometimes becomes necessary to repeat the spraying from the fact that the egg-laying season lasts during considerable time. Many of the insects last in their perfect state for at any rate a month or a little longer, and in such an insect as the plum curculio, which begins the spring in the perfect state, the season is brought down to a much narrower limit than is the case with many others that emerge from their chrysalis or third stage at some other time of the year, because anything that may deter or check them in their development of course would extend the season during which the perfect insect emerges. It may not be necessary, but there may be no harm in mentioning for one moment that all insects pass through four stages. All insects come from insects like themselves. There is no such thing known in any branch of natural history as spontaneous generation; and although this is the general opinion among people not conversant with different branches of natural history—some people think that mosquitoes, cheese-mites and many other insects come into existence in some curious way that has not been explained, owing to the decay of the object upon which they feed—I merely say that this is entirely wrong. All members of the animal world, and insects belonging so the animal world, are subjected to the same laws and created under the same laws, whether they be large or small. All insects, then, come from the male and female like themselves and are reproduced. All insects pass through four stages. First or all there is the egg; then from that the caterpillar stage; then the third stage or chrysalis and then the insect. In the case of the plum curculio the egg is laid, a young maggot hatches from that egg and attacks the fleshy portion of the plum. After a time in the case of plums the fruit drops to the ground—in the case of peaches and cherries sometimes not at all—and very frequently cherries remain on the tree until the insect has passed through its second preparatory stage, and is ready to assume the third or chrysalis stage. At that time it leaves the fruit and falls to the ground. It remains under the ground for a short time, and then comes out in a perfect state in the autumn, and then hibernates or passes the winter under any object of refuge that it may find, either in the crevices of the bark, under grass or other litter left about in the orchards. That indicates to us the necessity or the advisability of clearing up all rubbish that may be left about in our orchards. Again in the spring when these insects appear, long before the flowers or the young fruit is ready to be injured, they frequent the trees and then go to the ground and hide about the bases of the trees, and only come out during the night or on dull days when they are not seen, frequenting the trees and eating the young bark. This shows us that the early spraying, combined with insecticides and fungicides that are so largely used, would be advantageous. I refer to the fact that insects may be deterred from attacking the trees by some other means than by the direct poison taken by being eaten. Now we know that various insects are attracted by various scents. People who collect insects frequently make a mixture of sugar

and beer or sugar and essential oils, which they place upon trees, and in that way insects are attracted to them. In the same way we find that every plant when bruised has its own essential odor; if you bruise an onion, there is a peculiar odor; if you bruise a cabbage, it is the same way; and when we handle plants to transplant them, they become very much more liable to attacks of insects than when grown in the ground. Everybody has noticed that cabbages when grown in hotbeds are not so much subject to attack as when planted in the ground. This comes from the fact that in handling them they are subject to attack. Now, Paris green has decidedly a perceptible odor when mixed. Everybody has noticed the peculiar—and to some people very suffocating—odor that it has. Two of my acquaintances are so much affected by Paris green as to make it quite an unpleasant poison for them to use, and in fact one gentleman present here, Mr. Hilborn, cannot use it at all, and this is not fancy, because on one occasion when he was at Ottawa, I mixed Paris green with some other material and asked him to use it, and he came over to me some time after and said, "I don't know what that is, but there is Paris green in it, for it makes me feel faint or unwell." It may be that Paris green, having a peculiar odor, is a deterrent, and makes those insects keep away. It does not matter whether we can explain how it does keep insects away; practical experience has shown us that when plum trees are sprayed in the spring the crop reaped from them is much freer from curculio than when it is not done; therefore, fruit growers who want to save their pockets should spray their trees. This remedy is not so efficacious as it is in the case of the codling moth, which is the one that is spoken of so frequently as the apple worm. This apple worm is the result from eggs laid by a small moth. In the latitude of Ottawa, we have distinctly only one brood in the year. When you get west of Toronto you come to a region where there are frequently two broods. When you get to London you come to a district where there are always two broods, and the second one is the more injurious. When we get to the Pacific coast, and California and Oregon and Washington Territory, there are three distinct broods, and sometimes what is called a subsidiary brood, that is, an accidental brood which grows in certain seasons. The life history then changes in different districts. At Ottawa, we can spray our fruit trees once in the spring, and the practical result is that our trees are exempt from the codling moth; and I think it is not too much to say that if trees are carefully sprayed in the spring, during the time that the moth is laying its eggs, our apples will be free from the codling moth. Prof. Craig, in treating our orchard at Ottawa, has had this result which I speak of. His apples were practically clean, and no appearance of the apple worm, and this was from the careful way in which the work was done. Mr. Robert White, who is present, tells me that they were practically eradicated from his garden after he sprayed. Before he did so they appeared every year, and he hardly ever got a crop of Tetofskys or Duchess apples, and now he has them; and of course they come at a time of the year when apples are very valuable, because they take the early market and are very acceptable and easily sold. I would direct the attention of all fruit growers and those interested in the growing of fruits to the little bulletin that has just appeared from our own Department of Ontario at Toronto Prof. James has given here some extracts from letters which he has received, and as it will be useful perhaps to comment on some of these, I will, with your permission, take a couple of minutes to read some of them. From Essex he gets the report: "Apple worm very bad on trees not sprayed." Then we may gather that upon those that were sprayed they were not so. This merely bears out and confirms the experience in other parts of Canada and North America. Again from Essex: "There have been a few local tests of spraying apple trees. Where they have been sprayed three or four times at intervals, the results have been almost marvellous." Then he goes on to say: "Fine, large and good apples." From Leamington: "People are finding that it pays them to spray" That is the crucial test that we have to apply to all our work; if it does not pay us to spray, it is no use doing it; if it does pay us to spray whether the results are what are claimed for the methods or not, we must do it if we want to make a success of our business. From Huron county: "Insect pests, notwithstanding the application of the Bordeaux mixture, have done immense harm to orchards this season." And why shouldn't they? This is one of the instances that were very frequent years ago, but not so much to-day, when people

thought it was a panacea whatever the insect attacked. Now, Bordeaux mixture, although it has very decided insecticidal qualities, is not an insecticide first of all; it is a fungigicide, which, by virtue of copper salts, destroys all fungous pests; and we are going to get to this difficulty now, that as it has become popular and people in Ontario and Canada are saying it pays them to spray, a great many people who don't pay the proper amount of attention to the proper methods for any certain disease or injury, are going to use the wrong application. Now, Bordeaux mixture is not an insecticide to be applied generally, and as a matter of fact I only know of two particular kinds of insects where Bordeaux mixture actually acts as an insecticide. One of the most remarkable of these is with regard to the potato. Now, the Colorado potato beetle is very easily treated, as everybody knows, with Paris green; but there is another little insect, the flea beetle of the potato, which is extremely difficult to treat with Paris green. Two very good results have come from the work of Prof. Jones of Vermont, and of my own at Ottawa, during the past year—that potatoes sprayed with Bordeaux mixture to prevent the fungous disease known as potato rot, were also exempted from the attacks of the potato flea beetle. The potato flea beetle, although not in Canada such an injurious insect as many others, is reckoned by Peter Henderson as of more injury to potatoes, as injuring the crop, even than the Colorado beetle, and he found it most difficult to abate. Now, we find that the Bordeaux mixture acts as an insecticide for that. The same results were found with Prof. Craig in Ottawa. This year, when they were spraying with the Bordeaux mixture and Paris green, excellent fruits were grown, and with very much less trouble than ever before. We must know these different remedies. We must know those that are applicable to the case in question, and those are the only ones that we must apply, and we must not expect that we are going to get those results easily. It has taken fifteen years of constant dinning, point after point, to get the people of Canada awakened, and I don't know anything that has given better results than the resolution passed by this association last year, by which the Government at Ottawa was requested to get Prof. Craig to lay out that plan of experiments; and I think there is nothing that the country should be more thankful for than that this association did pass that resolution, that the Government did send Prof. Craig, and that you had such a competent man to carry out that work among so many difficulties. When on one occasion he went there, and all his pumps burst and everything went wrong, he was not disheartened at all, but he got off by a night train and went into the United States and got the best pump that was to be had, and forced a success when other people would have failed. (Applause.) I think that everybody should recognize that it is not only the work done by the association in getting that plan suggested and brought about, but the exceptional man that you had to carry it out and force it through to success. Now, it is necessary for us to know which remedy to apply, and therefore I have always made it a practice in speaking and writing to condense the experience of others with my own down to the point of saying which is the best remedy, to mention that one remedy only, and let other people that like to experiment go through all the work again that other people have done, and play with the other remedies, and amuse themselves if they like; but I tell them beforehand that it is going to be an expensive amusement, and they had better consider beforehand and find out which is the best remedy. Now, which is the best remedy for those two insects I have spoken about? People say Paris green is not an efficacious remedy for the plum curculio, and they say jarring trees is a better remedy. Well, so it is if you are playing at fruit growing; but if you are making a business of fruit growing and you have seven or eight thousand trees, I think you will find it is rather an important thing to find out which is the only practical remedy. Now, the only practical remedy is spraying your trees with these arsenites that I have mentioned, and those of your best fruit growers that have their experience say that it is the remedy which finds them, and is therefore a practical remedy. It is my duty to consider most carefully all the remedies that have been suggested, and I unhesitatingly say that the remedy for plum curculio is spraying the trees in the spring. An early spraying will be more efficacious than if you begin only when the fruit is formed. With regard to the codling worm I forgot perhaps to mention that its life history is this: The egg is laid by the moth when the apple flower is turned up. You remember on the

plan that was shown this afternoon by Prof. Beach, the flower of the pear is cup-shaped. It is the same in the apple flower. You all know that as the apple increases in size, the weight is greater than the slender stem can bear, therefore it is carried down by its own weight, so that the cup, the calyx, is turned down. Then you must do your spraying before that calyx turns down. A sufficient quantity of this poison is lodged in the cup of the flower, and when the young caterpillar, which is extremely delicate, first hatches, it is at once killed and never makes an entrance at all into the apple. With regard to the second brood, which in this district or probably farther south than this, occurs injuriously—and this year was injurious on the pears in the Grimsby district—it is rather a more difficult subject to treat; but if you mix with your Paris green the Bordeaux mixture for your fungous diseases, and you spray your apples anywhere in the first half of the month of August, you will spray them when the eggs are being laid for the second brood of the codling moth. Generally, where two fruits hang together I think you will find it would pay you very well indeed, and the results will be satisfactory if you spray your fruit at that time. The dangers of spraying with Paris green have I think been so thoroughly explained away that we need not discuss them now. Careful analyses have been made over and over again, by which it is shown that the elements remove all traces of those poisons, and if the rain and wind do not do so, the natural expansion of the fruit forces off this dry powder so that it does not remain on the fruits.

I shall now pass on for a few minutes to some other insects, to put you on your guard against them. One of the insects which has occurred this year is known as the pear tree Psylla or pear tree flea louse. It belongs to the same class as the aphis, but it has the very decided difference of being able to jump, and is therefore called the flea louse. Its injury is this: it enters the stems of the flowers of the pears just as they open. The consequence is they drop from the trees, and flowers and leaves also and even if the leaves only drop the fruit will be injured, because the fruit has not the leaves. There is an excrementitious matter dropped by these little insects upon which a dirty fungus grows. The remedy is the kerosene emulsion which we spoke of this afternoon, and we have found by spraying the trees with this in spring, just as the leaves are opening, that these insects are destroyed and all injury stops. Another insect which fruit growers must be put on their guard against is the Pernicious scale or the San Jose scale. This is a native of Chili, in South America. It was introduced into California on some scions of fruit trees brought from Chili some fourteen or fifteen years ago. It was introduced three years afterwards near San Jose, California. The fruit packers and merchants gave it the name of San Jose Scale from that fact. In 1881, at the time it was described by Prof. Comstock of Washington, it was called Pernicious because it was the most pernicious enemy of deciduous fruit trees on the Pacific Coast. It had confined its injuries to the Pacific States. This last year was found not to be the case—it was found in Maryland, New Jersey, and some other of the Eastern States. At once the United States entomologists got out a circular, of which twenty thousand were issued in one month, to all the fruit growers and entomological societies, and it was well advertised. The effort that was made by the Government Department was followed out by the nursery men and fruit growers to the extent that probably at the end of this year, or certainly during this season, that insect will be eradicated where it has been traced. Great care has been taken to find it out. It has been traced into every orchard, and it was traced back to two nurseries in New Jersey, and their order books have been gone through and everybody to whom fruit trees have been sold has had his orchard visited; and I think we may say with very great reason of hope that it will be thoroughly eradicated during this season. I mention this to you because undoubted specimens of this insect have been sent to me from British Columbia. We shall take vigorous measures to have it eradicated. The British Columbia Government has taken very decided action to keep it from their province. Fifteen carloads of apples which were sent from Ontario growers to British Columbia were condemned and destroyed by the British Columbia Government, causing a great deal of friction; but when my opinion was asked I had to say that I thought they were justified in taking those extreme measures, because the codling worm does not exist in the Province of British Columbia. I took it for granted that it must exist there, as it is extremely injurious in Washington Territory, and

California and Oregon. From all authoritative sources of information, however, I cannot find confirmation of the statement that the codling moth is bred in British Columbia. If that be the case the Government of British Columbia are justified in most strenuous efforts to keep it out, for we here know how much the loss is; and on that occasion I wrote to the Government saying I believed the Executive officers of this Association could put the buyers and the shippers in possession of lists of the advanced fruit growers of this Association who had adopted the methods which had been advised so long of spraying their fruit trees, and in that way producing uninjured apples. I have not had an opportunity of asking you, but I think it is probable that either the Canadian Pacific Railway or some of the authorities will apply to me for that list; but this I know, that if the fruit growers here have applied the accredited methods that have been advised, they certainly have grown clean fruit if that work has been done carefully and properly as we know it ought to be. The remedy for the San Jose Scale is that same kerosene emulsion which we have mentioned. During the winter it may be applied to all trees at the dilution that I have mentioned—nine parts of water to the stock standard emulsion.

Mr. HILBORN: Would you please describe that scale?

Prof. FLETCHER: The general appearance of it is as if the branches of the trees had been dusted with ashes or lime.

Mr. HILBORN: I found a tree like that in my own orchard this year.

Prof. FLETCHER: Then you must examine it critically to see whether the scales when removed from the branches are oval or elongated. If it is a San Jose scale the scale is round, and it is the only round scale that is likely to occur on our trees in Canada. When full grown it is from one-eighth to one-sixteenth of an inch. When taken off the branch—each scale taken off and separated—it is only then you see the extent, so that the appearance is of a small round scale one tenth of an inch in diameter and of a small protuberance in the centre, but lying flat on the branch and giving the branch the appearance of being dusted with ashes or lime.

Mr. HILBORN: That is just about the description of what I have.

Prof. FLETCHER: I should be obliged if you would send me this. It is a very serious matter to decide what it is.

A DELEGATE: What varieties of trees does it attack?

Prof. FLETCHER: It attacks everything. It has done the greatest injury to peaches, oranges and stone fruits, but in California they found that every variety of deciduous fruit trees—all the trees that drop their leaves were attacked by it.

Mr. HILBORN: This was on young apple trees?

Prof. FLETCHER: It attacks apple trees very seriously.

Mr. MORTON: Does it attack any ornamental trees?

Prof. FLETCHER: Yes. Scale insects of all kinds are extremely abundant and injurious. The ordinary oyster-shell bark louse is a disgrace to the province and the whole of North America, because it can be controlled, and the methods are to fertilize well your orchards, feed them and see that they are properly cultivated and attended to, and if that does not keep them down spray your orchards with kerosene emulsion, and they can be overcome. The bud moth may be overcome by emulsion. A minute caterpillar spins a case shaped liked a minute cigar. The life of the insects is this: the eggs are laid, and the very small eggs of the caterpillar are seen at the end of August. They go beneath the leaves and cluster round the twigs of the apple trees, particularly on the spurs where the bark is a little rough. They remain there during the winter. In the early spring they come out and puncture the stems and leaves and flowers of the apples and do a great deal of harm. The only remedy which has given a successful treatment is to spray them early in the spring with kerosene emulsion. This has the effect of puncturing into these little cases and getting into the caterpillar beneath. The buds are not sufficiently large to hold Paris green, so emulsion gives the best results, although Dr. Young, of Adolphustown, treated them successfully with Paris green. For borers in apples the treatment is a pre-

ventive one, and every fruit grower should adopt the method by which all his trees are washed with a preventive wash to keep out borers during June every year as a matter of course. I do not think I have ever seen a borer at the Experimental Farm, and the reason I believe is entirely that Mr. Craig systematically and as a method has all his trees washed with the ordinary soda and soft-soap wash every year. Mr. Wellington Boulter has a method of washing his trees with strong lye, and he has trees half as big as my body which are just as smooth as the young bark on a new limb, and from this careful treatment systematically done every year. The young insects which lay the eggs from which the borers come are beetles. They will not lay their eggs on trees which have been washed with the deterrent wash such as I have mentioned. The canker worms all through Canada have done up and down a great deal of harm where the trees have not been sprayed with Paris green. I know there are instruments called tree-protectors, that there are bands of straw, and many other things to protect trees, but I don't think they pay for the time necessary to put these bands around the trees to keep the moths from climbing up in the autumn. One plan is to put a band of paper with sticky stuff on to keep the moths from going up, and I was asked, is it satisfactory? Yes, it is for a certain time, but when we have some days that are extremely cold, whereas that sticky stuff has to be kept in a viscid state, it does not work. These insects come up from the ground and that viscid matter—be it printers' ink, or rosin and linseed oil—in the cold nights will be sufficiently hard for the insects early in the morning to walk over it, and when the insects are very numerous they get so thick on the bands that those walking up walk over the bodies of those that have been caught in the bands. I believe the best remedy for the canker worm is to spray your apple trees at the same time as you do for the Codling moth with the Bordeaux mixture and Paris green. The bark beetle is very troublesome in the Niagara district, and is now doing a great deal of harm. This beetle only bores in the bark, but it has the effect of bringing out from the tree on every warm, dull day in the winter large quantities of gum—so much so that you can take two quarts of gum around the base on a small six or eight year old peach tree. Now, that gum is taken from the tree, and the amount of mucilage that is taken out of that tree is so much strength taken out of it which would have gone into the fruit of the following year. The result is that those trees are injured. Up to the present I have not a satisfactory remedy for this insect. We have found, however, that it is active and begins to work as early as February. On the bright, sunny days these little creatures come out. This year we shall try earlier to control it, and I think that applications to the bark of either kerosene emulsion or mixtures of whitewash and Paris green frequently repeated will have the effect of keeping this insect in check. Currant worms of course turn up every year—it is one of the insects which has been mentioned to me as injurious. The remedy is to spray them the first time they appear, just when the flowers are opening, with Paris green, or dust the bushes with Paris green and land plaster or lime, or some other diluent of a dry nature in the strength of one pound of Paris green to fifty of powder. There is no danger in using hellebore, for although it is a poison it is a vegetable poison which once diluted loses its power, and only affects insects on the bushes at the time. There is no use making tea out of used up tea leaves; it is the same with hellebore—having once diluted the dry powder it loses its strength, so it is not likely to be dangerous in any way in placing it of your currant bushes. The oblique banded leaf roller was injurious at Freeman, and was sent to me by Mr. Freeman of Freeman at the same time as the pear tree siller. I would like to refer to a matter that came up through the association, and upon which Mr. Craig and I wrote a letter to the "Canadian Horticulturist," and which has been referred to by Mr. Woolverton this evening, and that is the presence of black knot. I think we have got about to the understanding of this, that it does not matter very much to fruit growers whether that injury or disease is due to an insect or fungus or animal or anything else, but we do know this, that if these black-knots are cut out and destroyed you don't have the same danger to your trees afterwards; so I think we may give up the discussion. I don't think probably anyone that wrote the articles that were written will be prepared to say it was due to an insect any more than we say that mushrooms are due to the maggots which we find in them when they begin to decay; but the argument has been that because the black-knot contains maggots when they are

decaying, that therefore the maggots form them. I don't think the man is found yet who would argue that maggots in mushrooms form the mushrooms. Let people have their theories and amuse themselves with them; but if you want to grow plums, cut out your black-knots—that is all the part that concerns you or me; cut them out, and you will have them a good deal freer. (Applause.) In the township of Nelson, in Halton county, owing to the energy of Messrs. Peart, Fisher and Freeman, they have induced their municipal council to pass a law by which they insist that inspectors should be appointed whose duty it is to go through the plum orchards and see where the black-knot occurs. It is the same, I believe, in Mr. Pettit's region. They go through the plum orchards, and if they detect plum knot they notify the owner of that orchard that black-knot is there and that he must get rid of it. If they have not done it in ten days they become liable to an action, to be brought before the magistrate, and more than that—here is the safeguard—if the inspector does not make those people cut it out or take them before the magistrate, any ratepayer may have him brought before the magistrate and fined for that neglect of duty. So I think the time will come when we shall get rid of the black-knot if this method is generally adopted and carried out. A great advance has been made in horticulture during the last three or four years. Three or four discoveries may be mentioned which have revolutionized the whole of agriculture in this country. First of all there was the discovery of the spraying nozzles; and don't forget that when we recommend spraying a tree we mean spraying—we don't mean sending a douche over a tree or sprinkling a tree; we mean sending a spray that falls in a light, dew-like mist over the plants. To do that you must have a proper nozzle and a proper pump, and if you carry your pump in the shape of a knapsack, you must have pluck enough to do it till it hurts you. It is pretty hard work, and if you get a man to do it for you, you must see that he does it till it hurts him, for it is a very hard thing to pull the handle of the pump hard enough to force your liquid into a spray; but if you don't do it you might almost as well not do it at all. You have to cover the whole surface with the application. The discovery of the kerosene emulsion—the mixture of these chemicals and some coal oil which would render it innoxious to the plant you put it on—the discovery of the arsenites—are all discoveries of enormous importance. They are advantages you have which your fathers had not; for insects' injuries are no more abundant now than they were then, only fruit growing was thought so little of that they didn't think anything if they lost three-quarters of their crop in those days. Now, it has become a business involving not only an enormous amount of capital, but scientific knowledge and data which are necessary to every man to apply these remedies intelligently. More than that the advanced fruit grower to-day recognizes this, that many of these insects are not an unmixed evil, because he knows that if he will only apply the accredited and best methods that have been discovered he will secure enormously better crops than his ignorant and negligent neighbor who does not apply anything at all. (Applause.)

Mr. MORTON: I desire to move that the thanks of the members of the Fruit Growers' Association and the audience present, he tendered to Prof. Fletcher for the lucid and concise as well as exceedingly interesting discourse he has given us this evening. One of the pleasant features to me is that he is able to get down to the common understanding of us common folks. Scientists very often are apt to indulge in that unintelligible jargon with which they attempt to convey their scientific ideas. I for one must say that I have been intensely pleased with the discourse that we have had this evening.

Mr. BOULTER heartily seconded the motion, which was carried amid applause, and Prof. Fletcher briefly acknowledged the vote.

The SECRETARY: I want to ask a question about the raspberry cane borer. This letter was sent to the Deputy Minister of Agriculture, and the inquiry is this: "As you are to be at the big meeting on the 4th where the greatest of scientists and experts will be, I and many others will be forever obliged if you will ask in the open meeting what is best way to prevent the spread of the cane borer and saw-fly in raspberry bushes? If it gets a little more headway in Ontario we will have to go out of the business. I can cure any disease among bees, but I am beat out with the disease in raspberry canes."

Prof. FLETCHER: I don't know how the gentleman has had such difficulty, because among injurious insects I don't know one that is less trouble to combat than the raspberry borer, if I am thinking of the right one. It attacks the raspberry shoot for the following year when it is about two and a half feet high, and the tip at once fades and turns down, so that you can tell every tip that is injured, and you can cut off the tip of the cane.

Mr. HILBORN: I think it is the one that lays the eggs.

Prof. FLETCHER: This is not the borer at all. These eggs simply are the eggs of the tree cricket, and the part affected may be easily cut off and burned. The saw-fly is quite easily controlled with either hellebore or Paris green.

Mr. CASTON: In using this kerosene emulsion for fruit trees do you use the ordinary soap or whale-oil soap?

Prof. FLETCHER: The whale oil soap is better, but the ordinary soft soap will do as well. Whale oil soap is much more expensive, of course.

Mr. FISHER: May we expect to destroy the oyster-shell bark louse by using Paris green? I have had an experience which leads me to think so. I have an orchard of considerable extent, and I am not just prepared to explain just why it was that the bark louse appeared there, whether I starved it or was very careless with it or how it came about, but I was very much alarmed at the condition of the trees, and eight or ten years ago, when we commenced the use of the Paris green, it seemed as if the orchard would be destroyed by the bark louse, but shortly after we began to use the Paris green the lice began to disappear, and it may be that I was so fortunate as to use it just at the time that these lice were in their infancy and crawling about the limbs, and that the burning effect of the Paris green cauterized them or destroyed them.

Prof. FLETCHER: I think it is probable that at the time you used Paris green you also began to pay a good deal more attention to your orchard, and you cultivated it and paid more attention to keep it in condition. I think I may say unhesitatingly that Paris green would have no effect whatever on the oyster-shell bark louse, even on the small insects.

Mr. BOULTER: I showed you when you were at my orchard how we got rid of it with lye. Take an old broom that your wife throws away, and a little lye, and you will soon get rid of the bark louse. (Laughter.)

Mr. FISHER: May we always depend on Paris green to operate against the canker worm? At Burlington last summer we had a case on a large orchard—I think there are thirty-six trees in it—and the canker worm appeared there very numerous indeed, and the owner of the orchard took extraordinary pains to destroy them with Paris green, and although he had two pumps working there day after day continually, there were portions of that orchard that looked as if it had been under the influence of fire, and remained so till the second crop of leaves made their appearance.

Prof. FLETCHER: Certainly in treating the canker worm you can always rely on the Paris green doing its work, but the canker worm is one of those insects that hatches from the egg over a very extended period, and some will hatch at any rate over two weeks. Some batches of eggs laid some time before will hatch two or even three weeks after others, and the period is extended. I can only suggest, without knowing it, that after one of his sprayings these caterpillars hatched; or there was rain and that these caterpillars hatched afterwards; but certainly wherever it has been tried and the eggs had grown it has been efficacious. In Winnipeg last year it was one of their most serious enemies. I saw it in shade trees in the streets. It attacks the box elder or Manitoba maple. The remedy was effectual there. I can only suggest that in the case referred to it was raining up to the time the eggs were hatched.

PRUNING TREES—ESPECIALLY THE APPLES.

By W. S. Turner, Cornwall, Ont.

I have undertaken to introduce this topic more with the expectation of receiving than of imparting knowledge for, as I understand the art, pruning is practiced more with the idea of *guiding* and *directing*, rather than doing nature's handiwork in the growing of a beautiful and graceful tree.

Pruning should commence when the young plant comes from the nursery; one humorous writer has said it should commence at the first sprouting of the seed. Be that as it may, it is sufficient for our purpose that we start with the young tree from the nursery, and before a knife is used.

The form, habit, and nature of the tree must be first considered, as it is not desirable to check the natural inclinations of the tree too much. For instance, the Northern Spy, having an upright growth, should have a different training from the Fameuse, which is of a low, spreading habit. I would say then, commence with this requirement of the tree in view.

When the young tree is planted, see that all broken or damaged roots are neatly cut off, preserving as much as possible the fine roots. Cut the tops to three or four branches, if it is of a low growing habit, prune so as to have the topmost bud pointing upwards and outwards, if of a tall variety, have the topmost bud on the inner side of the tree, and then watch developments. Try and avoid forming a crotch; and the most important time to prevent this, is the first two or three years of the young tree's life.

If this is done, the pruning in following seasons will be simple and easy, as no large branches will have been permitted to grow out of their place.

Pruning large branches. A grower will hesitate before he cuts off very large branches, but when this is necessary, use a fine saw, cut part way through on the under side first; this will prevent the bark from tearing below the cut, trim off the cut and rough edges with a sharp knife, and give a coat of shellac, thick paint, or anything that will make it impervious to the weather. Care should be taken that the centre of the tree be not allowed to grow too close and thick, nor yet too much of a cup shape, as the latter plan would bring the weight of the fruit on the outside branches, on the other hand, the sun would he kept out, so the happy medium is necessary, and the grower will have to be governed to a great extent by the habit of the tree.

It is scarcely necessary here (only as a reminder) to speak of suckers and dead limbs; no thorough workman will have such a thing in his orchard.

At the Farmer's Institute meeting held in Cornwall, November 27th, 1894, the following question was put to Prof. Craig, the horticulturist, who was speaking on fruit growing: "Is a dead limb a greater drain on a tree than a live one?" The answer was, that, practically, it was a greater drawback to the tree, it was a lodging place for all kinds of destructive insects, the rot would also penetrate the tree, and eventually destroy it.

I will leave the pruning of small fruits and ornamental shrubs to those who are better qualified to deal with them than I am.

In pruning shade trees and fruit trees also, I would protest against the habit of leaving short stubs on the trees; cut close, and neat, having an eye to the symmetry and form of the tree, paint the cuts with some color that will be in harmony with the bark of the tree. I saw a large mountain-ash severely pruned the other day, and cuts painted a bright sky blue; this did not say much for the æsthetic taste of the proprietor.

I have endeavored in this short article to arouse in interest on this subject, and if I have succeeded, I shall be well repaid.

BULBS.

Rev. W. BACON, of Orillia, read his paper on "Bulbs," as follows:

Allow me before I address myself more immediately to the subject assigned to me, to express my great appreciation of the honor done to our town by the visit of the esteemed members of the Ontario Fruit Growers' Association and its directors, who are doing so much to develop the best and most refining of our industries—industries in which artisan and millionaire alike may engage with pleasure and profit. Moreover, I would like to say that I regard it as a great honor to be associated in any way with them in this their annual gathering, though I fear my subject may not much interest them, or create in those who hear me, the enthusiasm I feel in it personally. I note with great pleasure the increased interest which you as a body are showing in the department of floriculture, and in this division of a horticulturist's pursuits and pleasures, the long-neglected race of bulbs is again engaging the attention of the greatest specialists and being introduced more fully to all classes than for many years; and I know of nothing in the world Flora more deserving of the admiration and attention of all classes than the multifarious species of this division of flowers.

In the time at my disposal I can only hope to deal with a limited number of many interesting varieties, which should engage one's thought and attention, and receive at our hands a fair trial, and give a few descriptive notes on each in passing.

Before I begin to enumerate these and attempt a description of them as far as I know them, it may be well to give a few hints, as to soil, nature and natural habitat.

To begin with: The conditions offered in any well-managed garden are well suited to bulbs in general; but the soil best adapted for the cultivation of bulbs is one of a light, sandy nature of good depth, and well enriched with thoroughly decomposed manure, resting on a well-drained subsoil. This latter point is not essential to all alike.

Amongst this class of plants are found many of our earliest popular spring flowers, such as snowdrop, crocus, squills, tulip, narcissus, etc., all of which have either fleshy underground stems called corms, or attenuated stems coated with thick fleshy scales. These possess one important character which is nearly universal amongst bulbs, namely, that during the winter and early spring months they are in active growth, and during the summer and fall they are in a dormant condition.

The practice of lifting the bulbs annually as soon as the leaves have died down, cannot in the case of many of them be denominatd a natural one, and when it has to be resorted to as a matter of necessity there are some points of precaution to be observed. First, before the bulbs are lifted be sure that the leaves have died away naturally, the strength of the bulb depending almost entirely on the complete development of the foliage. In the second place, when lifted, the bulbs should be well dried in their outer coverings before they are stored away in a perfectly dry, cool place; as dampness and heat are liable to exert their dormant energies and induce root development. Thirdly, they must be planted again before any root action has taken place, else serious detriment will ensue to both leaves and blossom.

Nature will teach us some of the best rules to follow and instruct in her economies. Under natural conditions we generally find that bulbous plants are associated with other plants; not infrequently do we find them growing in masses under the shades of trees, or along the margins of plantations and in the forest. Here you see in operation the much talked of doctrine of reciprocity. The periods of active and dormant life are admirably sustained by this provision of nature. In winter and spring when other forms of vegetable life are in a quiescent state the bulbs are making their best and most important growth; the leafless branches of the trees enable the rains and the melting snows to penetrate the ground and fertilize the bulb to the very stems; but see! as soon as these messengers of life from the apparent dead have presented in their turn spring greetings in gorgeous colors and delightful perfumes they bow their many-colored heads in a graceful adieu, and the new growth of surrounding herbage and the leafy canopy above provide that shade and dryness of soil which affords perfect rest. This is the most important stage in bulb culture. Here then you see nature's laws. These observations are applicable to almost all bulbous plants.

Let us take up a few of those that are equally good for house and garden growing, some of which are not generally known, or as much as they deserve to be.

Take up first the *Allium*. These are of very early culture and, being quite hardy, are as good for the garden as for the house and conservatory. They can be had in three distinct colors, pretty blue, soft yellow, and immaculate white. They continue to bloom in rich profusion from December to April. The flowers are borne on long, clean stems and much admired. Don't crush the stem or bloom or you will soon discover the family to which they belong. Very cheap. Plant six or ten in a pot.

Achimines must be mentioned as one of the beautiful gesnerads with a pretty trumpet-shaped flower and bronzed leaf. A continuous blooming plant, lasting for weeks in the summer season. Well suited to greenhouse and conservatory. Start them in March. A gem of a thing for wire hanging-basket. Easy to manage and inexpensive. Introduced from Mexico about 1544.

I will now speak of the *Amaryllis*. Congenial conditions of climate and soil produce magnificent flowers of large size of what is known in the West Indies as the Barbadoes "Spice Lily." These royal beauties are amongst the most gorgeous bulbous plants grown. Their immense flowers and richness of coloring are simply incomparable. The bulbs are large, 7 to 16 inches in circumference and produce with great certainty majestic spikes of bloom from 18 inches to three feet high, bearing enormous trumpet-shaped flowers, averaging 6 to 10 inches across, of great substance, of rich and glowing scarlet, intensified by contrasting with the wide white stripe through each petal. When in bloom in winter and spring months no flower can approach their beauty. Each spike bears 4 to 8 blooms. Old bulbs two and three spikes in a season. A splendid plant for the house and window garden.

The *Formossissima* or Jacobean Lily, a quaintly-shaped beautiful flower or this species grows well in water like the hyacinth, or in spring, can be planted out of doors where it will bloom well. Of a dark red color.

The *Belladonna Major*, a fall blooming variety of extreme beauty and great fragrance. Large spikes 2 feet high bearing from 6 to 12 beautiful flowers, sweet as violets, white suffused with pink. A garden gem.

Then there are of less importance Amaryllis, *Atamasco*, *candida*, *rosea*, *Zephyranthes*, Sarniensis and purpurea or Vallota and Leopoldii. These plants are natives of South America and should therefore always be planted in a sheltered position after all danger of frost is over. Not particular as to soil, only that it should be well worked up and manured.

Alströemeria. Here is a genus little grown containing many charming species. They produce fleshy, tuberous roots, which, being somewhat tender, should be planted at least 8 inches below the surface, in deep soil of loose character. Don't disturb them very often. Aurantiaca is a very fine yellow, producing its blooms in July and August. Brought from Chili, 1831.

Anomatheca is a dwarf-growing plant belonging to the Iris family. The corms and leaves are those of a diminutive gladiolus. Flowers blood-red, produced in August and September. 9 inches high. Plant it pretty deep and it will thrive well in any light garden soil. South Africa, 1830.

Brodiæa, *grandiflora* and *coccinea* are very handsome, bulbous plants with somewhat long leaves deeply cut, and erect flower scapes, bearing at the top an umbel of drooping tubular, scarlet flowers, the ends of the perianth segments tipped with green. They are very showy and distinct and bloom in September. California, 1870.

Anemones. The anemones has long been a favorite flower in our gardens, and with the florist especially it has proved one of those subjects on which he has bestowed great pains in the direction of its improvement. Years ago in the old land it was much esteemed as an exhibition plant, but its cultivation has declined of late, not because it has lost any of its decorative value or beauty, but in consequence of the introduction of other popular plants to general cultivation. There are two sections, the double-flowered and the single-flowered, which with care will bear our climate, with protection, excepting when we

have seasons of unusual severity. Roots planted in October flower in May. Those planted in January about June. They can be had in almost every color and are very desirable. Plant in ordinary gritty soil with vegetable manure. Cover 3 or 4 inches deep with half-rotted leaves to protect from the frost. When buds appear in the spring apply a top dressing and water freely. Apennina, Joan of Arc, Ceresè primo, Eugenia are among the best colors.

The Crocus, Elwes' Giant Snowdrop, and *Chiéndoxa* (or Glory of the Snow,) *Camassia*, or Quamash of the Indians, with *Ixeas*, *Sparaxis*, *Scillas*, *Ranunculus*, all perfectly hardy, dwarf-growing, beautiful, early spring flowers, too well known to need further mention, should be more largely grown than they are in clumps anywhere almost, but more especially as a first border plant next to walks. The Lily of the Valley also, should not be so generally neglected as it is.

Then come the taller-growing varieties of bulbs for the next line in the border.

The *Ornithogalum*. A beautiful growing variety throwing up large spikes of white flowers, star-shaped with a black centre, having a very distinct perfume. Equally good for greenhouse and window culture; easy to manage.

Next we may mention the *Jonquils* the Daffodils, the Narcissis, Polyanthuses, etc.

Dutch Hyacinth, single and double.—These naturally fall into the next line and are exceedingly fine with their large trumpet-shaped flowers—smaller ditto, some with two colors, some with only one, some single and others double, delicately scented and a joy for ever.

Shall we pass by the lovely Iris with all its pencilled, flaky grandeur inviting us to stay and take a little pleasure? We cannot forego the enchanting scene of these flower-winged beauties. They are among the loveliest flowers in the world. There are many types of the English, the German, and the Japanese. Some grow but about 12 inches high, some 18 inches. Anglica, Bakeri alata, Peacock and Florentina are amongst the best, but *Iris Loretti*, a native of Palestine, is the finest perhaps in the world. Coloring very fine. The drop petals show a creamy ground color, dotted with crimson—purple spots with richly colored veins centering into a dark crimson—purple signal. The uprights are nearly pure white, marked with pencillings of violet lines. A very vivid red-yellow tinting of the styles gives by reflex a reddish lustre to the standards. A charming thing.

Japanese. But of course, the Japanese imported hybrids will now be specially popular, as they well merit. In doubles and singles their magnificence surpasses description by me. Enormous in size, measuring 8 to 10 inches across, and of charming pencillings and tintings—one color being suffused with another throughout, like the blendings of the rainbow. They are very hardy and attain perfection in a moist soil and will glorify your gardens in July and August.

Next in order are the matchless Lilies, in our hardy bulbous plants, for their lovely form and delicate colors. You may have them flowering from May till September and they cannot be overrated to mix up with Pœonies, single and double, Japanese and others.

Chief and best of them are: Madonna Lily (or Candida) white; Canadense, yellow spotted; Red C Flavum, delicately scented, pure yellow; C. Rubrum, red, darker spots; Calcedonicum, etc., upturned.

For greenhouse cultivation and window decoration: L. Harrissi, L. auratum, L. longiflorum, L. Krameri, L. speciosum, rosa, rubrum.

Tulips and Hyacinths. For spring bulbs for massing in beds no class equals the Tulip and the Dutch Hyacinth. Circular beds look best in quarter sections, of solid color; oblong beds in lines of distinct shades and markings; clumps in general mixtures. These should be planted in our rigorous climate, at least 4 or 5 inches deep.

Of Dutch Hyacinths, closely planted, a pretty circular bed can be had with lines of white, pink, blue—in their various shades. Plant in a sunny position at least 5 inches below the surface. Scatter litter over the bed in early spring, after the snow has left, to prevent harm from frost damaging the early budding plant.

These all with Roman-grown Pink, Dutch-grown White Roman, pink and blue, can be had in bloom in pots for the window and conservatory from December till June. Drain

the pots well 1 inch, keep on hand a supply of soft wood charcoal, place this next the drainage, in pieces as big as walnuts, placing the bulb in compost made of decayed turves, a pinch of leaf mould, not too much well-rotted cow manure, leaving the point of the bulb well above the soil. Put in a dark, cool place till the growth of 1 to 2 inches, then gradually bring to the light. Keep moist always. Tulips same treatment. Miscellaneous bulbs of exquisite beauty and fragrance for house cultivation made be tested almost *ad infinitum*, but we cannot forget the delightfully fragrant Freezia, white and golden. Grown much in the same way (10 in a 4 in. pot) as indicated for the Tulip and Hyacinths.

Oxalis. Still another little dainty thing so easy of growth and luxuriant in foliage, as the Oxalis, claims our notice. For a small table plant for the supper and dining room centre-piece can rarely be had with the same grace, compactness and beauty as this in white, blue and golden, small; and the new Bermuda, a perfect gem in yellow, large and fragrant. These with me are great personal favorites. They are very cheap and multiply rapidly. Thrive in any ordinary soil, rich and free. With good cultivation the German hybridist at work in Bermuda tells us that single bulbs have produced 75 stems at a time bearing over 1,000 blooms in one season. Try it and you will be pleased.

Nerine. Again, don't be shy of the "Nerine" of Guernsey Lilies, the Crimson Kirkii and Americana.

Cyclamen, or "*Alpina Asperule*" is a most beautiful and highly interesting winter and spring flowering bulb equally well suited to the window and greenhouse. Flowers are unique and foliage very ornamental, making it a splendid decorative plant. This family have of late years been very much improved, so much so that the small comparatively insignificant blooms that used to be met with bear no comparison with the splendid large, broad-petalled, distinctly-colored forms of this flower now so plentiful! This change has been effected through the perseverance of a few of the London florists (now taken up by the Germans) who, raising new varieties and studying the nature of the plants, adopted an entirely new course of treatment from the old practitioners who periodically dried of the corms almost to complete softness. I have made a specialty of growing these plants for 6 years in the latest improved strains, the Giganteum and Grandiflorum particularly, and from the testimony of others, with measurable success, and I know of no medium-sized plant that will add so much to the floral display all through the winter as the Cyclamen, when well managed. To obtain the best seed from originators one has in the business to pay as high as 2c. per seed, and we had the readiest sale to dealers of our own seed product at 1c. per seed. Innumerable shades are now obtainable and blooms of great breadth and substance, the petals sometimes measuring 2½ inches deep. Seed sown in 1892 produced for us two decided novelties, one a pure white with a fragrance stronger and much more pleasant than that of the Sacred Lily, the other being intensely deep red with two-thirds black in color. We had also 5 or 6 plants with 9 and 10 petals. Our best specimen without extraordinary means carried, as near as could be counted, 225 blooms and buds at once, this being the largest one year old plant I ever saw.

The best time to sow the seed according to my experience is in October. Ordinary seed-boxes should be prepared by draining them and filling them with an eqnal mixture of turf loam and leaf mould well baked, a little sand being added ; slightly cover the seed and put the boxes in a temperature of 50° and as soon as the seed appears put them near the glass to prevent them being drawn. When large enough to handle pick them out into larger boxes similarly prepared about 2 inches apart and keep them during the winter in a similar temperature and position. In the spring put into 3 or 4-in. pots, and as the days increase their length shade them from the sun's bright rays, as they cannot stand its full force. Pursue the same course till in their flowering pot, watering and attentively giving them air. In potting do not cover more than the lower half of the corm with soil, if you do trouble will follow. In the summer time they like a not over strong shower bath occasionally. This will help to keep down *their enemies* the *red spider*, *thrips* and *green fly*. If these are allowed to continue their ravages the plant cannot make good progress. To

flower them satisfactorily they must be kept hustling without a thing to check them. In the fall give them full light in an open space, give plenty of air at a temperature of 50° and your pains will be amply rewarded.

You will get a few blooms in November and they will continue increasing in number and size till February and March, when they should be in their full glory. After this their striking distinct color fades somewhat and in summer they will begin to tell you they want to rest, when they should be put in a shady position and water partially withheld, but do not dry them up as they did in the years gone by, little knowing their requirements at such a time. In the fall, again move into the larger pots, shaking some of the old soil from them, using similar soil to that before recommended and continue to care for them as heretofore. They will this season bloom much earlier and make fine displays, though the individual blooms may not be quite so large. The plants will live for years, but three years is long enough to keep them, younger stock being preferable. Don't fail to grow at least a few.

Gloxinia. To return to this family. If we take into account their neat habit of growth, their distinctness, their continuous flowering habit, the exquisitely gorgeous colors they possess, and the ease with which they can be grown it will easily be seen that there are few warmth loving subjects so well deserving of attention as the Gloxinias, which represent a genus of gesneraceous plants from the originals of which, imported from the warm regions of South America, have sprung the large family of charming hybrids now in existence. They flower continuously during the spring and summer, and are invaluable for decorative purposes; the blooms are also frequently used for cutting. They can be easily raised from seed sown in good time in the spring, following precisely the methods as with Cyclamen, only that they must have a temperature 60° to 65°, just keeping the soil nicely damp.

The methods of propagation we cannot stop here to go into.

We have also as a specialty of the family about 200 of Nægelia grandiflora, Longiflorum alba, which is a delicately scented blooming plant bearing its pure white flowers in pairs on stiff reddish stems about 15 inches high, each stem producing from 6 to 10 blooms. It is in its best condition about August to November and is very simple in its requirements. This I expect I have disposed of to an ever wide-awake Scotchman who like his fellow clansmen usually knows a good thing when he sees it.

Your patience, I am sure, will by this time be exhausted and I feel very much indebted to you listening so patiently to the crude thoughts of one who classes himself a novice amongst the novices in the presence of so many distinguished professors, specialists and learned gentlemen.

That you may not think I have no appreciation of the many beauties and merits of the lovely Gladioli, Lemonie's and others, I would say each year seems to bring fresh revelation of charming blooms having rich suffusions of colorings and markings that surprise me. They are so cheap too that all should grow them.

After some discussion upon Mr. BACON'S paper it was decided to change the programme in order to allow time for the drive and visit to the asylum on the morrow.

The PRESIDENT therefore called upon Mr. Caston to briefly deal with the question,

HARDY FRUITS FOR NORTH SIMCOE.

Mr. G. C. CASTON, of Craighurst, said: I don't know whether it requires altogether hardy fruits for North Simcoe after what we have heard about the Beaver Valley and about peaches growing around Collingwood, and after seeing the specimens of fruit which have been shown here. I might first mention the interesting fact that this is the oldest agricultural and fruit growing section in Canada. Agriculture was carried on to a certain extent here two hundred and seventy or three hundred years ago, and the first fruit planting was done here at that time. We learned from Parkman's "Jesuits in North America" that this part of Canada was the home of the Huron Indians—the only Indians inhabiting North America who practised agriculture—and in clearing up this country we have evidence of the old corn hills—they grew Indian corn—and at that time there

were 20,000 inhabitants of these Huron Indians in the county of Simcoe, while the Niagara Peninsula was inhabited by the Iroquois that were constantly at war with the other tribes. That may account for the savage nature of some of those inhabitants. At that time a number of plum seeds and other fruit were planted by the Jesuits around the shores of the Georgian Bay, and anyone who travels by stage from Parry Sound to Burk's Falls will find a number of those plum trees growing there yet —not the original ones, but ones that have sprung from them ; they have perpetuated their species. While in Parry Sound I was shown a sample of plums that were grown on some of those wild plum trees, and they are a good deal better in quality than some of the plums we are importing now from other countries and trying to grow as hardy plums. The planting of those seeds three hundred years ago was the first planting that was ever done in Canada. There has been a common idea that we could not grow anything up here except the Siberian Crab or a seedling apple ; and I just want to mention a few varieties that succeeded well here, and if I had time I could show you that we can grow any apple in this county that can be grown anywhere else in Ontario—(hear, hear)—and we can grow apples in this county in certain varieties that will challenge comparison with the best apples in the world. (Hear, hear and applause.) I have an apple here from the village of Stayner, that Mr. Pettit, the World's Fair Commissioner, thinks is a Newton Pippin. In the Liverpool market that apple is sold for three times the price of any apple that grows there. (The specimen was cut up and passed round.)

Mr. CASTON : Here is another apple handed me by Mr. George Street, west of Woodburn, on the shores of Kempenfelt Bay, and he calls it the Beauty of Kent ; it is of high quality as a dessert apple. In picking nearly a thousand barrels this year, my pickers found only one barrel in the whole to discard. Here is another apple that we have heard a good deal about of late years—the Blenheim Orange. A gentleman living out on the Orillia Road has an orchard of them doing well and bearing well for a number of years. It may not be of very high quality, but it is a very handsome apple, and entirely free from the attacks of the fungus, and it is of even size. It is an apple that would be of great commercial value. This sample was grown at Craighurst. Here is an apple that is going to be a valuable one for this part of the country. It is called the Mann. I think they are pretty near as good an apple as the Greening. They keep well and bear well, are not subject to many of the diseases, and are hardy. Then here is another apple I picked a good many of this fall—the Fallawater. It is a splendid cooker, keeps well, looks splendid in the barrel, free from fungus scab, and is altogether a valuable variety. I have the King of Tompkins, and there is now hardly a living tree ; it is too delicate for this section ; but by top-grafting it on some hardy stock you can keep it. I have been experimenting along that line for some years, and here is the result of some experiments. We have heard a good deal of the influence of the stock on the graft. Now, these have been grown on a sour seedling. I would like the experts to say whether there is any difference in the flavor of this King, and one grown on its own stock. (Samples distributed.)

Mr. MORTON : There is a distinct difference in the flavor. The larger one has a great deal more of that aromatic flavor that is peculiar to the King. I can distinguish it in the smaller apple, but it is less distinct.

Mr. CASTON : We can grow any apple that can be grown anywhere by grafting it on a hardy stock. I have another apple called the Gideon. The tree of that is one of the healthiest growing trees I know of. It has the healthiest foliage, a nice smooth, bark and dark, rich green foliage peculiar to these trees. It is not affected by the scab at all either in the foliage or in the fruit. It is a very handsome apple where the tree is kept properly pruned, for it has a nice red cheek on it. I have merely touched upon some of these fruits that we are able to grow in this section.

Mr. A. M. SMITH moved that the papers which have been crowded out for lack of time be considered as read and incorporated in our report.

Mr. MCNEILL seconded the motion, which was carried.

Mr. BEADLE read a series of resolutions of thanks, which Mr. Race seconded and which were carried unanimously.

Mr. WHYTE said : I am sure we would all listen to Mr. Race for ten or fifteen minutes on the subject of Roses for Out-Door Culture.

Prof. CRAIG : There was a special question as regard to that subject.

The PRESIDENT took the sense of the meeting, and it was decided to hear Mr. Race.

ROSES FOR OUT-DOOR CULTURE.

Mr. T. H. RACE said : At the outset I wish to state that there is a mistaken idea in regard to the trouble of perpetuating the rose. There would be no difficulty in growing and very handsomely blooming the rose in this town. When I bought my present premises in Mitchell twelve years ago, a lady quite distinguished in floriculture said it was impossible to grow roses there, but I said to her just this, "It has been written by a man before our day, that in order to have a beautiful rose in your garden it is first necessary that you should have a beautiful rose in your heart." Now, I leave it to any lady or gentleman here if love will not remove any obstacle that has ever presented itself in this world—not only the love of man for a woman, but love for a rose. If you have a rose in your heart you will overcome every obstacle and produce a beautiful rose in your garden. There is no more trouble in raising roses than any other house plant. I am not going into the varieties of roses that I have, because I must have one hundred and twenty or one hundred and thirty varieties in my garden, but I should like to have said something about the social, moral and religious influences of the rose and all other things. I don't spend any time at all in the house during the summer time. I go out into my lawn with my papers and my books and sit down there with my roses round me, and I never feel alone, because there is society for me in the roses. If you wish to start with a few roses, the first I would mention is the General Jacqueminot. It is a little loose in its make-up. The color is everything you can desire. The growth of the plant is very rank. The formation of the rose is a little bit loose unless you keep the plant very richly manured and well pruned back. It is a rank and rampant grower. You can give it all the growth that it will take, but prune it down well in the spring if you want it to bloom well and form well. You can prune it down so well that it will produce very handsome blooms and any amount of them. There are a great many varieties of dark-colored roses very similar to that one. If you wish another take the Fisher Holmes ; but if you wish to take half a dozen dark roses, take that half dozen in the General Jacqueminot. Now, for a white rose take the Madame Plantier. It has one fault—it has only one season for blooming, and that a rather brief one, but it is a beautiful rose for the time that it lasts, and it is no trouble to cultivate. Prune that down well and it will give you a very heavy mass of bloom. Now, in order to make up nice bouquets, you want a perpetual White Moss. That is a rose that you can grow anywhere and that will sucker ; if you get one plant of it you will have any amount of plants in a year or two to distribute among your neighbors. The perpetual White Moss rose is perpetual only in one sense—that it is perpetually out of bloom. (Laughter.) You cannot get it to open out except under very exceptional conditions ; but you don't want it to open out. It is a very rampant grower. Prune it down well in the spring and it will give you just a solid mass of the most beautiful buds that you desire, and very heavily mossed ; and it is only for the buds that you want that rose in making up your bouquet. Now you want another one, and take the Glory of the Mosses. I would just as soon have an old common English or Irish rose as any other, but it is not such a rampant grower as the Glory of the Mosses, so I will give you that one. That gives you four roses, and with those you can very well afford to start, and I know that you will be pleased with those. Now, all they want is a good, loose soil, clay loam and plenty of manure, nicely protected in the winter time.. If you have plenty snow here just allow the snow to press around them, because there is no better protection than snow drift ; but if you have not plenty of snow bend them over and cover them with leaves or clean

straw, and then in the spring prune them down well, and you will have no difficulty. Now, I will add another one, rather pinkish rose, that is the Magna Charta, a most beautiful English rose, a heavy bloomer. It has the same fault as Madame Plantier, that it has a short season, but it is a magnificent bloomer forth the time it does bloom. However, if after the first blooming season you trim it down well, cut out all the old stocks, manure it well, and allow the young shoots to grow up, and it will give you a second blooming season. In August, this year, I had nearly all my magnificent Charta bushes in heavy bloom, and you can get very nice blooms in that way. That is quite enough for you to begin with. General Jack will give you bloom throughout the season, even up to the time the snow falls. With regard to the care, you don't require to do anything with your roses except to spray them occasionally with Paris green water, not as strong as you would use for other plants. I don't know whether the Bordeaux mixture does any service at all to the rose, but this I am sure of, that the lime in that mixture would destroy the foliage, and I place a great deal of value on the foliage of the rose bush as well as the rose itself; and the Paris green leaves no injurious effect, no blemish on the leaf. Now, if you have mildew—I may say that there is such a thing as mildew of the rose if you plant your roses in a soggy soil or in a partially shaded position—the Bordeaux mixture would probably do something as a preventive for that, but there is a better one. Get your roses out of that position, for they have no business there Never plant them in a soggy soil, and if you don't do that you will not have mildew. You want to have your roses in a porous soil; keep it nice and clean; give it plenty of sunlight and air, and you will not be troubled with mildew, therefore you will not need any such fungicide as that; and treat it as I have stated with a little Paris green several times during the summer and that is about all the care that your roses will require, and I know that if you do that you will be delighted with the results. (Applause.)

A DELEGATE: About what quantity of Paris green do you put to a gallon of water?

Mr. RACE: I put two teaspoonfuls to an ordinary pailful of water—not heaping teaspoons, just a teaspoon level full.

Prof. FLETCHER: I would like to protest against that measure of a teaspoon. The teaspoon may vary all the way from one third of an ounce to over an ounce, that is by actual measurement in weight. On one occasion I went into the laboratory where some of the officers of our farm get their lunch, and I collected all their teaspoons, and the extent of difference from the largest to the smallest was from one third of an ounce to an ounce. An ounce of Paris green is a large quantity, as you will find if you measure it up. Mr. Race mentioned an enormously strong mixture for roses or anything else. That is strong enough for potatoes. I think it would be better for you to go to your chemist and ask for a quarter of an ounce to be measured up by their delicate scales. A quarter of an ounce would be certainly enough for three gallons of water on roses for the saw-fly larvæ.

Mr. RACE: I use a small teaspoon and I simply level it.

Prof. FLETCHER: These rule-of-thumb measures are very dangerous and give us a great deal of trouble.

Mr. RACE: I wonder if there are any ladies in this town who are trying to cultivate the rose in the house? I would advise them to put those roses right out-doors into a nice soil in the summer time, and they will be more pleased with them there than almost any other plant they can put there, and they will bloom almost constantly during the summer time. In the fall cover them up with leaves and let them stay outside all winter. The foliage will die and blacken, but the root will be quite healthy in the spring, and as soon as the season opens they will sprout up again and give you constant bloom. Two weeks ago last Monday I went into my own garden and picked a very large bouquet of that variety of roses after the first heavy snowfall. I mention this simply to show that the house rose will bloom up to the time that the snow buries them.

Mr. FOWLIE, President of the Orillia Horticultural Society, was called to the platform, and assured the delegates of the pleasure with which they had been welcomed to the town, and the profit that had been received from the meetings. On behalf of the local society, he tendered their thanks to the Association for accepting their invitation, and he hoped it would be only a short time before they would return. (Applause.)

RESOLUTIONS.

The following resolutions were brought in by the Committee on Resolutions, and were heartily passed by the Association.

Professor Panton's Lecture.

Resolved, That the thanks of the Association be given to Professor Panton for his very valuable and instructive lecture on the fungi. We desire to express to him our grateful appreciation of the great kindness shown to us by him in coming to our meeting and entertaining us for an hour at so great inconvenience and with such entire self-forgetfulness.

Experiment Stations.

Whereas, The Board of Control of Experimental Fruit Stations for the Province of Ontario have selected experiment stations with experimenters as follows: at Trenton, W. H. Dempsey, experimenter; Craighurst, G. C. Caston, experimenter; Winona, M. Pettit, experimenter; Leamington, W. W. Hilborn, experimenter, and whereas the appointment of experimenters is subject to the approval of this board,

Resolved, That this Board of Directors approve of such appointments.

Mr. Pattullo.

Resolved, That the thanks of this meeting be given to Mr. Pattullo, of Woodstock, for his generous response to our request, and for his able and interesting address on the very important subject of good roads. We desire also to express our sympathy with him in his efforts to secure this great boon, so essential to the best interests, economical, social and ethical of our rural population.

His Worship, the Mayor.

Resolved, That the thanks of this Association be tendered to His Worship the Mayor, and to the citizens of Orillia and vicinity for the very courteous welcome given to us, and for the great interest shown by them in the work of the Association, as manifested in the exceedingly beautiful and creditable display of the winter fruits of this region, and by the magnificent entertainment provided for our evening meeting.

Orillia Horticultural Society.

Resolved, That the thanks of this Association be tendered to the President, Secretary and members of the Orillia Horticultural Society for the hearty and courteous reception accorded to us by them, and for the great trouble taken by them to render our meetings a success. And the Association desires to express its satisfaction at the highly intelligent interest taken in horticulture by the people of Orillia and vicinity, which is largely due to the fact of their having such an excellent organization in their midst.

Press.

Resolved, That this Association desires to express its appreciation of the press of Orillia in co-operating to make our meeting a success by its judicious and kindly notices, and also in extending the usefulness of these meetings by its concise reports; and we also take the opportunity to thank the Press of Ontario in general for its unvarying courtesy towards our Association.

The proceedings were closed by the meeting singing the National Anthem.

VISIT TO THE ASYLUM FOR IDIOTS.

On Friday morning the delegates were driven to the Asylum for Idiots under the escort of a deputation from the municipal council of Orillia, accompanied by the editors of local journals and other prominent citizens. The visit to the various departments of the institution was most interesting and instructive, and the impression left upon the minds of all the delegates was one of gratitude that those mentally afflicted were in charge of such able and enthusiastic instructors and managers as Dr. Beaton, Miss Christie, Miss Lafferty and others.

Luncheon was provided at the conclusion of the visit of inspection, and at its close short addresses were delivered.

APPENDIX I.

THE PACKING AND MARKETING OF PEACHES.

By W. Boulter, Picton, Ont.

In taking up and endeavoring to solve one of the difficult problems of my subject will try and handle it from both the standpoint of seller and buyer. In first place the peach growers of Ontario had a bountiful crop the past season, probably never equalled in any previous year, while our neighbors at the south of as had a very poor crop, and we saw what not usually happens, "Canadian peaches" finding their way in considerable quantities into the "American" markets. We understand they enter there duty free now, which was no doubt very beneficial to our growers here, leaving our neighbors over there to candidly judge of the benefits of "Free Trade *vs.* McKinleyism" in the peach trade. I have started a large canniug factory in Toronto this year, and in doing so I wished to be in a favorable position as to locality to obtain peaches, and also pears, plums, and other fruits, which are sent in such large quantities to market here, and to be able to compete with California fruits. At the revision of our Canadian tariff last session of Dominion Parliament the Government—for what reason none of us engaged in the fruit packing, as well as the growers can conceive of, as they claimed to make a farmers' tariff—reduced the tariff on canned fruits and vegetables, thus allowing California peaches which as you all know are grown in abundance there to be brought in here, thus making a slaughter market of their goods here. Our own Canadian peaches, I believe, are equal if not superior in flavor of any grown on the continent, and we had virtually driven California peaches out of the market. We with other packers determined to hold our trade if possible, knowing we had a favorable climate for fully maturing the fruit. We placed ourselves in communication with the largest commission houses in Toronto to supply us and to send us only the choicest fruit from our best growers. As soon as the fall peaches came on we commenced receiving them, but must say we could depend upon getting scarcely any uniform peaches, the tops of the baskets being faced beautifully while the centre and the bottom would be filled up with small and worthless stuff, such as windfalls, clingstones, etc., and we very seldom could get them to run uniformly. We called our commission men's attention to the fact—who, mind you, had promised to supply us only with first-class fruit and to take back what was worthless. So confident were they that they could control their packers—they repeatedly wrote expostulating in strongest terms, still the peaches would come on very little better. Knowing some of the growers personally I wrote them of the facts, and all the satisfaction I could receive was the proverbial "hired men would not do as they were told." We were obliged to put up a large portion of them in what is called "Pie Fruit," and sell for what we could get. I also saw thousands of baskets shipped off by express to different parts of Canada, and personally I know these caused much dissatisfaction by reason of the way they were packed, and prices as growers well know, dropped away down, and our fine crop of peaches did not bring to the growers as much as they should. This has been my experience as a buyer. I am also a large grower of fruits on my farm in Prince Edward county, and know that those engaged in fruit growing after years of waiting look for some returns for their expense, and know also that it is not pleasant after getting a good crop to have to sell it as it were at a sacrifice; but I wish to impress on growers who perhaps feel annoyed at the commission men they have sent their fruits to, and feel that they have been imposed upon, that I do not think this will be borne out on investigation, as the commission man depends upon his sales for his living, and endeavors I believe to get for his customers all they can. The old law of supply and demand and quality must rule in all cases. And when growers will persist in mixing up the good with the bad, the small with the large, they must expect poor results. First pack your peaches, if possible, uniform in baskets, and discard those baskets with thick wooden bottoms that weigh from three-quarters to one pound more than those not having them. Also put only your choicest together, commencing at the bottom of the basket and so on to the top. *Pack each variety*

by itself. Don't put in a few "clingstones" with good kinds just to work them off. Also put your seconds uniformly in size by themselves, using all the care possible and cover nicely putting your name in each basket. Now you will soon be surprised how prices will jump up for such peaches. But you will say it would be labor lost, if all did not follow this rule. I say "No," emphatically. Nothing will pay you so well as to put up your peaches first-class. Recollect as growers you have a heavy protective duty of one cent per pound on fruit and on the basket, which is the highest duty per cent. I know of. So unless more care is taken by growers you may find some day not far distant this duty may be reduced materially. There is very little area in Canada for peach growing, as you all know that east of Hamilton very few if any are grown. Thus the demand for this luscious fruit can always be maintained, and, if more care is only used in marketing it, the result will be a better remuneration for your labors and it will be a pleasure for your commission men to handle them. Look at our Canadian apples and the high reputation they have in England and over the whole world. It is by our buyers insisting on packing only the choicest fruit possible, discarding all small and worthless ones. Now I have not a doubt but that there are as honest peach growers as in any other business, and I do not wish to cast any reflection on those, but, if possible, to strengthen and uphold them in their endeavars to put up only first-class goods; and I trust if we have another favorable year that our growers will use more care. I candidly say from years of experience in buying fruits that we can produce as fine flavored fruit, and even better than I have bought from our neighbors south of us. Let your motto be "to excel," and always bear in mind when packing your peaches they shall be put up right, and to recollect how you personally would feel if, like the mechanic who buys a basket to carry home to the good wife to put up, you found on opening them that one-half were worthless. What would you expect him to say?

BEE-KEEPING AND HORTICULTURE.

By J. R. Howell, Brantford, Ont.

The true horticulturist, like the successful bee-keeper, is an enthusiast. I need not remind any, who plant trees and grow fruits, of the genuine pleasure that thrills the soul when nature responds to his intelligence, thought and careful direction. But after all man's skill in planting, after ransacking the earth for improved varieties, after propagating, grafting and hybridizing, he must rely mainly on nature's methods of fructification. The favoring winds and industrious bees are needed to fertilize the bloom to insure a harvest of fruit. As a means of accomplishing this end, there is no question that the bee is of great service to the grower of fruits. Observant horticulturists have estimated that our fruit crop is increased one-third by the cross-fertilization of flowers by the honey bees. No other insect is multiplied in such vast numbers so early in the spring when their agency is so much needed to fertilize the orchards and small fruits. If the winds were the only means of carrying the pollen from flower to flower, how often would perfect fertilization fail from too much, or too little, wind during the brief period when the bursting buds are sighing for the life-giving dust from the neighboring flowers? Not only is honey provided in the delicate flowers to entice the bees, but the pollen so essential to the plant (and just as essential to the bee in furnishing the proper food for its young), is placed in close proximity to the nectar, so that in getting the latter the bee is unwittingly carrying the dust from flower to flower, working out the wise plans of Providence as relates to plants. The drop of honey is placed in the flower not because it is needed to perfect the flower or fruit, but to tempt the bee to brush her hairy legs against her anthers, and distribute the golden dust. So the bee introduces itself at once to the horticulturist as his friend. What then is there to hinder these two vocations from going hand-in-hand since each is helpful to the other? They ought at least to be on friendly terms. And now, in conclusion, my horticultural friends, remember that the busy little bee is your friend and co-worker. She multiplies your fruits, she gathers the richest of nectar to tickle our palates and soothe our lungs. She toileth early and late; and at the close of her brief but useful life she asks neither grave nor monument.

THE VEGETABLE GARDEN.

By W. Warnock, Goderich.

Where circumstances permit a choice situation a garden ought to be as fully as possible exposed to the rays of the sun, and in Ontario, or this latitude, a gentle slope to the south, southeast or southwest is preferred to a level surface; but a slope to the north is by all means to be avoided; a deep rich and easily penetrable soil is desirable and the soil should be three feet deep for the best results. It is often important to trench to get a uniform depth of soil, and it should be plowed or dug in the fall. A liberal supply of manure is necessary for a garden; the kinds of manure must be accommodated to the soil and to the different plants, and often depends in part on other circumstances. Care must be taken not to overdose with guano or indeed with strong manure of any kind, by which plants might be killed rather than nourished. Care should be taken that each crop is succeeded by one of a completely different kind, a rule which is indeed always, as far as possible, to be observed both in horticulture and agriculture. It is also of great consequence to have the means of irrigation, or at least of abundant watering, which even where the climate is generally moist greatly tends to increase the produce in dry seasons, and is almost always necessary to the perfection of certain crops. This use of water is far from being so common as it might be in Ontario gardens. I will make one reference to manure and its effects on soil to get the best returns; we will give requirements for tomato culture as this is one of the most important vegetables we should cultivate. It needs a quick fertilizer; it is a gross feeder; to prevent it from growing too much to vine and ripening a small crop late in the season, the best conditions for an abundant and early ripened crop is to plant on a sandy loam, made rich through previous manuring for other crops of vegetables. Work it two or three times before planting time, then just before planting sow broadcast nitrate of soda at the rate of six or seven hundred pounds per acre, plant only good stocky plants, work the soil often, once a week at least, and you may expect a good crop, ripening early. Do not under any circumstances apply a fertilizer that is slow in giving up its substance. Fertilizers applied late, or which give up their substance late, give poor results because they delay fruitfulness and the plant is overtaken by frost before it yields a satisfactory crop. Nitrate of soda applied at one time early in the season gives a much heavier yield than the same amount applied at intervals. Now we can easily see a reason for treating some plants different from others with respect to fertilizing the soil. The tomato, if cultivated properly, commences to give up its fruits long before its season is over, hence the need of a quick fertilizer; whereas the turnip, carrot, and potato continue to require a greater amount of plant food to the end of their season. The strongest point in horticulture and gardening is the man, he is the main factor, the one that needs to rise above his association. He must be a close observer of facts and results, able to trace cause to effect and effect to cause; he must read as well as think and that carefully; he must learn how to propagate, how to cultivate and how to fertilize; he must learn how to combat the army of insects that prey upon many of our most useful garden vegetables, etc. Take man out of horticulture and gardening and it will return to where he first picked it up, to the wilds and jungles of nature, where he had to find it, after he had been turned out of the garden God placed him in at first. A lengthy description of how to plant, cultivate and fertilize even a few of the many useful vegetables would be out of place in this paper, for there is a number of valuable books published on gardening and all who wish to improve their knowledge in this line can avail themselves of this opportunity. The chief obligation resting on us as horticulturists is to impress on all the importance of having their vegetable garden as well as some plants and trees for their attractive beauty, for there is through the farming community a great many that feel they have no time to attend to a garden and are deprived of the great benefit of a varied vegetable supply of food, and in the towns and villages and even the cities there are many that can have a supply of vegetables in their season if they would

only try. Now I will show what a man can have if he has only two square rods of land suitable for vegetables. Here he can have a nice supply for a small family, of rhubarb, beets, and parsnips. Here are only three varieties of vegetables and not comparing them with the potato they are in my opinion the very best collection you can plant in your small plot. The great point in their favor is that no insect pests trouble them. Rhubarb requires very little care and is both fruit and vegetable. It is the first thing in the spring and remains all summer. A great many do not know the value of beets. The young plants require to be taken out of the bed in thinning to a proper distance; they make the very best greens for early summer and when the roots get larger and even full grown it makes a vegetable dish, when boiled tender and cut up fine, that everybody learns to appreciate who has had the privilege of testing it a few times. It is much more wholesome than cabbage, and a great deal more easily grown. Then the parsnip comes in for winter use and lasts till rhubarb is ready in the spring, with very little trouble in storing, as it remains in the ground all winter and is taken up as wanted, until the middle of April. Then take up the balance, and they will keep in a cellar for six weeks. It is also the heaviest cropper of all garden vegetables, only requiring deep, rich soil to make it the most satisfactory crop in quantity. Now for a garden where a man has time on his hands to dispose of and who has a home and family. He should have his vegetable garden as well as the flower and ornamental plot. It only needs to be started and its pleasures, not counting its usefulness, repays all who are not in an active business life. For instance, the fall agricultural and arts exhibition comes round, and you can go into your garden and cut a cauliflower that weighs 20 lb. white and perfect as if it was carved out of alabaster; you can pull up parsnips six lb. in weight; and find great pumpkins, and a squash or two, weighing over three hundred lb. Now you feel a high sense of pleasure because you know you have made these grand specimens of vegetables through the work you have so patiently bestowed on them. Now this is the sphere in which a man should live whatever occupation he follows, he should work to make new developments; and in the vegetable kingdom the field is larger than any other, as a great part of the vegetable kingdom has been created for man's food. So our duty is to improve upon what we find in nature and it is of great importance to have a unity of feeling on the great benefit of a higher knowledge in vegetable growing. The field is large and there is room for united action such as will tend toward the dignity, honor, pleasure and long life of man.

GARDENING.

By J. Cuppage, Orillia, Ont.

As in designating our various spheres, our Secretary has assigned to me general subjects. I shall try to occupy my allotted ten minutes by saying something about gardens in general, and a few minor topics in particular.

Gardening is the most ancient, natural and healthful of all employments; for we read that God Himself planted the Garden of Eden with fruit trees, plants pleasant to the sight and good for food, and herbs bearing seed. Our first parents were placed in this garden to dress it and to keep it. Ever since it has been the employment which brings us closest to the beauties and luxuries of nature, and when we neglect or ignore its pleasures we are departing from the pristine perfection of humanity.

As Miss Hodge, Mr. Bacon and others are better qualified to deal with flowers, climbers and ornamental shrubs, I shall merely observe that many of our native plants are well worth cultivation, with the advantage of being thoroughly adapted to the climate, and that between annuals, perennials and available pot or bedding plants, for half the year Ontario justly deserves to be called Florida.

Note.—To Mr. Warnock, writer of this paper belongs the honor of exhibiting the largest pumpkin and the largest squash at the World's Fair.—*Secretary.*

In vegetables we fail to take advantage of our opportunities, as comfort and health would both be subserved by a greater variety upon our tables. Too many hold to the old English notion that the vegetable marrow is the best of all squashes, overlooking the Hubbard, Turban and many others, which I maintain to be the best and wholesomest vegetables in the world if properly cooked and used. It is a curious fact that many authorities recommend boiling them like potatoes and then squeezing out the water.

Strange that the tuberous-rooted sunflower, or Jerusalem artichoke, is so little used, as in Britain it is a favorite and excellent accompaniment with roast mutton, as the white turnip (also neglected here) is with boiled mutton; and, seeing that the real European artichoke does not thrive in this climate, the so called Jerusalem one is our nearest substitute.

As time precludes enumeration of small fruits, I will only note that some wild black currants well deserve a place in the garden, being longer lived, thinner skinned, milder flavored and with a longer and later season than the cultivated sorts.

The dry climate and prevalent mildew make our choice of gooseberries rather limited, and in efforts to originate American varieties it is to be regretted that because its fruit is smooth the low swamp berry seems to have been chosen for the female parent, as its sprawling habit and lack of flavor are serious faults. The other class, with high flavor and upright, tall growth, should have made a better foundation. While berries of some wild varieties are actually too prickly to handle, others are large, good and only slightly hairy. Their peculiar mode of renewal renders them especially long lived, and I have known a plot which after planting received no special care to continue bearing for 40 years.

In raspberries many fine varieties and hybrids have originated from the wild sorts, sometimes even white or yellow; but waste places are now becoming few.

For cherries our chief dependence has been on the old Kentish, but for years it has been sadly affected with black knot, which is tainting other kinds also. The Vladimir and other Russians may soon give us a greater variety of good quality.

In this district it is foolish to strive for fruits unsuited to our latitude, and to grumble because we have not everything. We have enough for variety, pleasure and profit, and there is even advantage in exchanging ours for the productions of other places and climes. We need not try to grow peaches, many of the finer varieties of plums, nectarines, apricots or quinces, but we have other varieties sufficient for all purposes. Pears are as good, and I believe that soon the list of our reliable pears will be doubled, and that we shall even have ironclads of good quality.

The wild plum deserves more attention, as, being native, it is thoroughly hardy, and several varieties are excellent for preserving and good for eating.

Doubtless the mountains of China, Japan and Corea will supply us with many good and hardy fruits and vegetables now that commerce and enterprise have opened up regular intercourse.

In apples the flavors, periods and other qualities are sufficiently diverse. Several varieties are specially adapted to this district, and I have reason to think that very many accidental seedlings if rescued from neglect would prove well worthy of propagation, and not only here, but even on Yonge street and down the St. Lawrence river.

But how to do it is the question. A travelling agent or expert would be too expensive. Perhaps some plan could be devised to offer prizes for seedlings of first and second quality, conditional on supplying so many scions.

It is generally believed that apples do not, or will not, reproduce their own varieties from seed, but I have two seedling St. Lawrences bearing, and perfectly true.

I also know a good Northern Spy, a large tree, free from the usual breaking down of the centre, which grew from a seed sown from 50 to 60 years ago.

In apologizing for this prosy paper, I only hope that these random remarks, derived from my limited observation and experience, may suggest something useful, or start profitable discussion on the subjects we are met to consider.

SOME HANDSOME AUGUST-BLOOMING FLOWERS.

By D. W. Beadle, 303 Crawford St., Toronto.

The two coneflowers are very showy, well worthy of cultivation in the flower garden. The variety most widely disseminated is the Orange-colored Coneflower, *Rudbeckia hirta*, (*Linn.*) It begins to bloom in July, continues through the month of August, and often to the middle of September. The ray florets are of a flaming orange color, varying in length from half an inch to an inch; the cone-shaped centre, or disc, is of a deep, rich purple, contrasting most effectually with the bright rays. It is to be found in open meadows and sunny spots on the borders of thickets. The plant is rough, hairy on leaf and stem, grows to the height of one to three feet, often a straight, simple stem but in good soil is frequently branched from near the base. The flower heads are borne singly on long stalks, well adapted for cutting, and last in the water for a week. The leaves on the stalk are few, widely separated, and without petiole (leafstock); the lower leaves are petioled.

The Yellow Coneflower, *Rudbeckia laciniata*, (*Linn.*), may be readily distinguished from the preceding by its light yellow rays, greenish disk, smooth stem, branching habit, taller growth, and laciniate (jagged) leaves. It grows to a considerable height in rich, moist bottom lands, but usually from five to seven feet. The ray florets are often two inches long, narrow in proportion to their length, and drooping. Their color is a clear, bright yellow. The heads are borne on long stalks, and keep in water for a week when cut. This species is usually found growing in low thickets, and is specially vigorous in the flats of the Humber river, not far from Toronto.

There are two species of liatris to be found growing in Ontario, known in some places by the name of Blazing Star. The Cylindrical Blazing Star, *Liatris cylindracea*, *Willdenow*, is quite common in the vicinity of Toronto, growing to the height of twelve to eighteen inches; the stem is slender, upright and rigid; the leaves long, narrow, grass-like. The flower heads are set alternately on the stem, in the axils of the leaves, and borne on stout stalks. The form of the flower heads is cylindrical, and there are from eight to twelve heads on a stem, containing from sixteen to twenty rosy-purple flowers in each head. It is to be found in dry soils, usually on the slopes near lakes or streams, growing from a bulbous or corm-like root; these corms can be easily taken up in the autumn and transferred to some dry, sunny spot in the garden, where they will flourish with but little care.

Liatris Spicata, Willdenow, is much like the one just described, growing taller, from two to five feet high; the heads more closely crowded on the long spike; and frequenting moist instead of dry soils. It has not been found by the writer, in the vicinity of Toronto. Mr. J. A. Morton mentions it among the attractive wild flowers growing in the vicinity of Wingham, and Macoun says it is found in marshy meadows from Sarnia to Point Edward.

The flowers of both varieties retain their rosy-purple color when dried, thus making an excellent winter bouquet. They can both be grown from seed as well as by transplanting the corms, and make, in a short time, an attractive feature of the flower garden. There is another Canadian species found in our prairie lands, the flower heads of which contain from thirty to forty flowers. It grows in dry soil, from two to five feet high, and according to Gray is to be found from New England westward to Minnesota, and southward. It is known as *Liatris scariosa*, *Willdenow*, The rudbeckias and liatris belong to the Composite family.

The Butterfly-flower, *Asclepias tuberosa*, (*Linn.*), grows in any dry soil in the open sunshine; sometimes to be found in open woods, or among trees of small growth. The roots are thick and in young plants carrot-like in shape, but lose this form with

age, becoming more woody and extending to a considerable depth. They do not bear transplanting well, on which account it is better to raise them from the seed sown where the plants are to remain. The stalk is erect, clothed throughout with broadly linear leaves, and fine hairs; branching at the top, the branches terminating in a corymb of brilliant orange-red flowers, varying in intensity of color with the age of the flowers. The plant continues in bloom for a considerable while, and the cut flowers keep a long time in water, thus adding to the variety of such as are desirable for table bouquets; while the cut stems do not exude a viscid, milky juice so abundant in some of the other species of this genus.

The peculiar form of the individual flowers of all of the plants of this genus is a very interesting study, a careful examination of which is earnestly commended, noting particularly the hooded nectaries on the tube of stamens which encloses the pistil, and the attachment of the anthers to the stigma, with their hanging pairs of pear-shaped pollen-masses.

The Cardinal Flower, *Lobelia cardinalis*, (*Linn.*), is widely distributed throughout Ontario, frequenting low grounds, yet easily grown in any good garden soil, especially from seed. The flowers are very showy, deep red, borne on stems two to four feet high, in elongated, somewhat one-sided racemes. The flame color of these flowers renders them a very conspicuous garden ornament. The plants will thrive in partial shade, or in the open air, but do not endure well a protracted drouth.

The Great Lobelia, *Lobelia syphilitica*, (*Linn.*), is a blue flowered species, the flowers nearly an inch long, borne on a leafy stem varying from one to five feet high. This also is to be found in low grounds throughout Ontario. The writer has had no experience with it in cultivation, yet has no doubt but that it could be easily grown from seed in good garden soil, especially if not allowed to suffer from drouth.

The Harebell, *Campanula rotundifolia*, (*Linn.*) This beautiful flower begins to appear in the last days of June, and continues with us all summer. The blossoms are bright blue, from half an inch to three quarters long; the plant seems to prefer partial shade, takes kindly to the garden, and makes a pretty appearance planted in masses. It is also indigenous to Europe.

"E'en the slight Harebell raised its head
Elastic from her airy tread."
—*Walter Scott.*

ROSES.

By Webster Bros., Hamilton, Ont.

Roses in the garden will in all probability be attacked by the thrip as soon as the foliage appears. Spraying with Paris green will be found an effectual remedy. A small quantity of soft soap, or even common soap, added, will make the remedy more effective. Care should be taken to burn all the wood pruned out of the roses, as that is where the thrip winters in the larvæ state, and as many of the roses are alive to the tips, or nearly so, this spring, a large number of the little pests will probably be found at work.

Examine all budded roses and remove all suckers that may have been overlooked last summer, this is of very great importance, as the suckers if allowed to remain, invariably destroy the rose bush. In pruning, the strong growing varieties should not be cut back as closely as those of a medium or weakly growth, for instance, if a strong vigorous bush of John Hopper were pruned as closely as Louis Van Houtte, the great probability is that John would produce elegant canes but little bloom. Some objections may be taken to this plan, but as a set-off, there is a certainty of great numbers of roses.

The old question of budded or own root roses, comes up fresh as ever every spring, and there is doubtless something to be said for and against either. Roses budded on the Manetti stalk will succeed in a greater variety of soils than roses on their own roots, and some roses such as La France, will attain a good size budded on a strong stalk, while on their own roots they have sometimes a struggle for existence for the first year or two. The only objection to the budded roses is that they are liable to throw up suckers from the stalk which if left to grow will injure the roses.

The "nice black mould from the woods," is the source of many a total failure among rose amateurs; it is doubtless desirable for some plants but roses will have none of it, a stiff clay suits them much better.

Reference was made to the comparative merits of Gloire de Dijon, and William Allen Richardson. The writer's experience has been, that while the old Gloire de Dijon is hardy enough to survive our winters with slight protection, and is a strong grower and an abundant bloomer, W. A. Richardson was, when grown under similar circumstances, a free grower, but an unusually shy bloomer; what few blooms were produced, were however very fine.

A very good plan for growing the strong-growing varieties, is to plant a number of them together and, instead of shortening back the canes, simply to thin out weak shoots, and to carefully bend down the canes, securing the tips to the ground by means of pegs or otherwise; this will cause the eyes along the entire length of the canes to send forth shoots and bloom, that would never have started had the cane remained perpendicular.

HEDGES.

By Charles E. Brown, Yarmouth, N. S.

Surrounding our principal school grounds, several acres in extent, and enclosing a large number of our finest private residences, the hawthorn spruce and beech hedges of Yarmouth, excite the wonder and admiration of visitors. The common Scotch hawthorne is used, to which Burns refers in his "Cotter's Saturday Night"

> "Beneath the milk white thorn that scents the evening gale,
> Fond lovers in each other's arms breathes out the tender tale."

Three year old plants are imported, costing, delivered here, about eight dollars per thousand, the ground is properly prepared, drained, dug over and fertilized, the plants are set early in the spring, being among the first to grow, in double rows, ten or twelve inches apart, breaking joints. They are pruned two or three times a year to make a dense, bushy hedge, and allowed finally to attain a height of five or six feet, or in some cases, twelve or fourteen, that is proof against man or beast, dog, goose or small boy, and a perfect protection from the wind

I can remember the first of these hedges, set out over *sixty years ago* and *still one of the best.* About thirty years ago, to improve its condition, it was cut back to the single stem, which was then hacked and slashed when it was desired new buds should break, and within a few years the whole hedge was in finer shape than ever.

A few specimens of this single white hawthorn have been allowed to grow, without pruning, to a height of about twenty feet, with a diameter of trunk of (12) twelve inches or more, and in some cases whole hedges have been neglected and permitted to grow to their full height. In June these are a mass of white bloom of most delightful perfume, filling the whole air with fragrance. The double white, single and double, rose and red hawthorn, are grown singly among our favorite ornamental trees, and are very beautiful during the brief period of bloom, but are destitute of fragrance.

Hedges of the native spruce from six to twenty feet high, are also grown to perfection; they bear pruning equally with the thorn, and in the winter season, in their comfortable dress of living green, opposing an impenetrable barrier to the fiercest winds, seem preferable to a deciduous hedge.

The Norway spruce fails here *utterly* everywhere; in hedges the lower limbs die, and as individual specimens, the growth is shaggy and irregular; out of the hundreds that have been planted, not a single fine specimen has ever been grown.

The Scotch beech has been planted in hedges and as a single ornamental tree, chiefly in our cemetery; it bears pruning well, and its perfect hardiness, its thrifty, rare growth, and its fresh, pretty shade of foliage makes it a favorite.

No other hedge plant has succeeded out of the many that have been tried, on the recommendation of the ubiquitous tree agent. I recall the locust, the cedar, the buckthorn, the privet, and the box, among the failures.

STRAWBERRY GROWING—THINGS WE HAVE OBSERVED.

By John Little, Granton, Ont.

Every year we plant new varieties of the strawberry to test and compare with those of former season's planting. By this means we arrive at the value of those most worthy to keep for one's own use, and to sell to those who buy yearly from me those best commended.

This spring I ordered several varieties at $2 per doz. and did not get them till near the beginning of June (after coming through the Custom House, which is as bad to many in Canada as the potato bettle and other noxious vermin). The plants were badly wilted, yet I did not like to lose them all, although it was so late in the season. I came to the conclusion I would cut the tops off some of the roots and put them in water, slightly warm; they were cut just above the crown. They remained in the water till morning, and then I set them carefully in ground all ready prepared for them about six inches apart, so that if they lived I could cut them in squares, earth and roots together. To my astonishment not one plant died, but took hold of the soil at once, and one month from the time they were planted one could not tell the difference between them and those planted in April.

I have been so favorably impressed by this method that, if spared till next spring, I will cut the top from all strawberry plants we shall set. After being a close observer of growing plants for years, I have noticed that plants set early had a struggle for life, when three to five large leaves had to be supported. What benefit did the plants derive from these leaves? Your answer will be, not any. If no benefit was derived, they were an injury. I think I can prove beyond a doubt that the large leaves upon young plants are injurious to them. Take a four-year-old tree, set with limbs not trimmed; then take a similar tree and cut branches back within eight inches of stalk, and then notice for yourself which will start to grow the sooner. The greater amount of sap it requires to start a plant or tree, the longer it will be in starting.

Another point worthy of mention is that it is the crown you want to have start to grow, so that it may be able to keep its leaves above ground; and it has a great disadvantage where the plant is struggling with these leaves, which feed upon the few fibrous roots that have taken hold. With the plant stripped of these leaves, there is nothing to support, and the plant takes hold of the soil at once, and in a day or so you will see the crown making its appearance; and it would take some two or three weeks if it had the upper part of the plant feeding from it. Some think without you have a heavy top the plant is worthless, but, if you experiment in this line, you will become wiser.

Another point worthy of mention is *at what season should the plant be allowed to run* I answer not before July, and for fruiting beds I prefer August 1st to 15th; and the plant at that date will produce more runners than the plants that were let run at July or earlier. If the runners are kept back the plants get a good start, and it has nothing to support but itself; but if let run at an early period the runners will be feeble, and so will the plant the rest of the season. This season was proof of this with

me. Had I let the plants run at an early date they would not have made one-third the plants they did. Those that started in September run along the ground, but at the first rain took root and made fine plants, as the vines were vigorous and had strength to push them.

Again, many overlcok another important point and allow the blossoms to remain on the plant, thus exhausting its strength. The proof of this will be evident by noticing two plants side by side; let one bloom and produce fruit, and nip the bloom from the other, and see which one will make the finest plant or the first runner. These points are worthy of observation. and you will profit by testing them.

Selection of Varieties.

There is no business more profitable than strawberry growing, provided the right method is followed. One of the chief secrets of success is to have not only a variety suited to your soil and climate, but the best varieties so suited. In no fruit grown is there as great and rapid improvements as in the development of the strawberry. If a man sticks to an old variety, either originally inferior, or running out, as all are prone to do, when he might be growing one twice or even three times as productive, the vines of which will, owing to superior size, firmness, beauty and general excellence, bring 50 per cent. more in any market, it is easy to see what disadvantage that man is laboring under. Yet, there are such men without number. They are fighting a brave but losing battle against progress. Keep in front, or, at least, keep in the front line, and grow the variety or varieties best suited to your soil. Do this or go out of the business, the quicker the better.

Most members of the Fruit Growers' Association are acquainted with the following varieties: Woolverton, Saunders, Williams, Bubach No. 5, Haverland, Hatfield; but of the newer varieties they may not be much acquainted, such as Marshall, Brandywine, Mary, Henry Ward Beecher, Aroma, Cyclone, Banquet, Noble, Princeton Chief, Tennessee Prolific, Timbrell, Annie Laurie, Splendid, Staples. The most of these will be offered for sale next spring. In productiveness, size, quality, they compare favorably with Woolverton, Bubach, Marshall and Timbrell.

COMMUNICATIONS.

Regrets.

Letters of regret, because unable to attend, were received by the Secretary from the following gentlemen: Messrs. A. McD. Allan, Goderich; J. R. Howell, Brantford; J. D. Stewart, Russeldale; Dr. Aylesworth, Collingwood; E. B. Edwards, Peterborough; William Saunders, Director Central Experimental Farm, Ottawa; the Hon. John Dryden, Minister of Agriculture, and others.

World's Fair Medal.

The following letter from John Boyd Thatcher, Chairman Executive Committee of Awards, World's Fair, was received by the Secretary. It refers to the medal and diploma conferred on the Ontario Fruit Growers' Association for the excellence of its publications on horticulture, viz.: Sixteen volumes of The Canadian Horticulturist, and the many valuable reports published during the term of years from 1862 to 1893, inclusive.

The letter reads:

Washington, D. C., March 24, 1894.

Dear Sir,—I have this day forwarded to the Honorable Commissioner representing your country at the World's Columbian Exhibition an official copy of your award, which, in due time, will be inscribed in the diploma, and reach you through the proper channels.

Yours,

John Boyd Thatcher,

Chairman Executive Committee on Awards.

Seeds from Russia.

In our Report for 1892 the members of our Association will remember that the Secretary gave a statement of the varieties of apple, pear and other fruit trees, scions and pits sent to his care by our friend Mr. Jaroslav Niemetz, of Winnitza, Podolie, Russia, who has become a regular member of our Association and a contributor to the pages of our journal.

Last spring he sent us a large collection of seeds, which the Secretary at once placed in charge of Mr. Saunders, Director of the Central Experimental Farm, Ottawa, where the best facilities are at hand for their germination.

The following letter from the Director gives an idea of the results. Time only will show whether any of the varieties will be of value to us in Canada:

L. Woolverton, Esq. Ottawa, Nov. 14, 1894.

Dear Mr. Woolverton,—You wrote me some time ago in reference to the seeds forwarded from Mr. Neimetz, asking what success we had with them. I have looked up the particulars and submit you the following. You will observe that there was only one species in the lot (*Ribes Sibirica*), which was named, which detracts very much from their value.

The number of plants growing are as follows:

	No.		No.
10 Rose	34	12 Grape	23
6 Potentilla	35	2 Prunus	24
1 Spirea	36	13 Black Currant	30
90 Ribes Sibirica	7	3 No. 44, no name	
2 Ribes "	9	2 Rhamnus	11
15 Hop-tree	21	21 Rhamnus	12
85 Clematis	22	76 Rhamnus	13
1 No. 43, no name		14 Sambucus	45
3 Pyrus, variety of wild crab	45	45 Salvia	

24 No. 26, labelled gooseberry, does not look like gooseberry.

A large proportion of the seeds failed to germinate.

Yours, very sincerely,

Wm. Saunders.

Special Fruit Market in England for Canadian Apples.

A letter was also received by the secretary from S. J. Rutherford, St. Hilda, Gaspereaux Co., N. S., as follows:

St. Hilda's, Gaspereaux, N. S.

Dear Sir,—I am having sent to you weekly edition of *Times* (London, England), just received, with a passage in it marked with reference to a circular note issued by the Premier of Tasmania to the heads of the other Australian Colonies with reference to an apple depot in London for the sale of Australian fruit. There is no doubt that this idea would be a great help to the fruit growers

Could not the subject be brought up for discussion at the annual meeting of the Fruit Growers' Association, to see if the Government could not be induced to join the Australian colonies in the scheme, should they determine to try it.

The fruit from Australia not arriving till about May, and their crop being over before the Canadian fruit arrives in September, would enable the building to be kept open for quite, if not nearly, all the year.

I remain yours truly,

S. J. Rutherford.

Copy of extract from *London Times:*

TASMANIAN APPLES.

In a circular addressed by the Premier of Tasmania to the premiers of the other Australian colonies, suggesting the establishment of a joint depot in London for Australian produce, so as to obtain for the producers some of the profits now secured by middlemen, the following passage occurs: "So long as Tasmanian apples are put on the English market through what is practically a close corporation in Covent Garden, so long will the growers be limited in their market, receive less for their produce than they should, and be entirely in the hands of people whose sole object is to get through as much business as they can in one day, regardless of the condition of the market and the growers' net returns."

INSPECTION OF ORCHARDS.

The extremely practical interest which the Tasmanian Government takes in the subject of fruit growing is shown by the following extract from "Walch's Tasmanian Almanac" for 1894: "By Act of Parliament 52 Vict. No. 16 the colony of Tasmania is divided into 30 'fruit districts' to make better provision for the destruction of the Codling moth *(Carpocapsa Pomonella)*. In every district the fruit growers elect a board, consisting of seven members, from among such fruit growers; three and four members retire alternately in the month of September. The board appoints an inspector or inspectors for each district, who may at any reasonable time enter any orchard for the purpose of inspecting the trees. Occupiers of orchards are to furnish, on or before the 1st of December in every year, a return stating the number of acres planted with fruit trees on the 1st of September. If return is not made, the occupier is liable for a penalty not exceeding £5. A tax not exceeding 6*d*. per acre is to be paid annually by occupiers. Owner of unoccupied orchard to be deemed to be occupier. The Governor-in-Council may make regulations for the guidance of boards and their officers, and for prescribing the manner in which, and the times in which, the occupier shall bandage, dress or otherwise treat infected trees. Every person who sells or offers for sale any fruit infected with the moth is liable to a penalty of £5. The following regulations have been made under the Act: "Every occupier of an infected orchard to give notice in writing to an inspector or to the board of the existence of the moth in such orchard. The occupier of an infected orchard shall cause all trees in any orchard to be bandaged Bandages to be placed upon the trunk of the trees not later than the first day of December in each year, and shall be removed and cleansed during the month of July following, and shall not be replaced upon the trees until the month of November then next. Occupiers shall remove all rough and scaly bark from trees during period between May 1 and August 1 in each year, and burn or otherwise effectually destroy such bark as soon as removed. All infected fruit growing on the trees to be at once gathered, and all infected fallen fruit to be forthwith picked up, and all such infected fruit shall be treated for the effectual destruction of the grub, either by immersion in boiling water or in such other way as the board may sanction."

APPENDIX II.

REPORTS OF AFFILIATED SOCIETIES.

THE BURLINGTON HORTICULTURAL ASSOCIATION, 1894

OFFICERS:

President: GEO. E. FISHER, Freeman P. O.

Vice-President: J. S. FREEMAN, Freeman P. O.

Secretary-Treasurer: A. W. PEART, Freeman P. O.

Assistant-Secretary: G. W. PEER, Freeman P. O.

Directors: Apples—O. T. SPRINGER; Grapes—C. U. DYNES; Small Fruits—W. V. HOPKINS; Pears—W. F. W. FISHER; Peaches—ALEX. RIACH; Plums—J. S. FREEMAN; Vegetables—W. J. BRIDGEMAN; Shipping—JOSEPH LINDLEY.

Auditors: C. U. DYNES and EDWIN PEART.

Executive Committee: DR. HUSBAND, H. WILLIAMS, and ALEX. RIACH.

Entertainment Committee: The President, Vice-President, and Secretary.

We are pleased to be able to report another successful year for our Society.

There has been a substantial increase in the membership, which now numbers over seventy, our meetings have been well attended, and a keen interest is shown in all matters pertaining to fruit growing.

More and more the fact appears to be forced home, that, under the present economic conditions of farming, the line of growing fruit is one of the most profitable that this district can pursue.

Since our last report we have received official notice that the Burlington district scored three awards at the World's Fair, Chicago, on apples, pears and grapes, respectively, thus indicating our capabilities in the production of prime fruits. I might also add that there has been a large increase in the fruit acreage here during the past year or two. According to custom many members of the Association availed themselves of our annual outing. A pleasant and profitable day was spent among a few of the leading fruit growers in the Grimsby district. These outings are useful, entertaining and popular.

A Society exhibit of fruit was made at the Industrial Fair, Toronto, to which was awarded the first prize.

An effort is being made in this township (Nelson) to check the ravages of the black knot. Under the "Black Knot and Yellows Act" the council was petitioned to appoint at least one inspector to enforce the provisions of the Act. Two have been appointed, and they are now on their rounds. We believe that much good will result from it.

Papers and addresses were given before the Association during the year by the following gentlemen:

At the annual meeting in January, Messrs. Geo. E. Fisher, the President's annual address, on the fruit industry of 1893; Edwin Peart on "The Apple Crop"; Alex. Riach, the "Small Fruits;" A. W. Peart, on the "Grape Crop;" W. F. W. Fisher, on "Pears and Peaches;" J. S. Freeman, on "Plums;" Harry Williams, on "Vegetables" and Joseph Lindley, on "Shipping."

At subsequent meetings, addresses were delivered by Messrs. O. T. Springer, on "Spraying;" J. S. Freeman, on "Black Knot;" W. V. Hopkins, on the "Strawberry Crop," and W. F. W. Fisher on "Currant and Gooseberry Culture."

These addresses were evolved from the experience, observation and information of successful fruit-growers, and consequently were valuable.

A. W. PEART,
Secretary.

BRANT HORTICULTURAL SOCIETY, 1895.

OFFICERS:

President: LYMAN CHAPIN, Brantford.

Vice-President: CHAS. GRANTHAM, Cainsville.

Secretary-Treasurer: D. M. LEE, Paris.

Directors: J. R. HOWELL, Brantford; T. A. IVEY, Brantford; CHAS. GRANTHAM, Cainsville; DAVID GREIG, Cainsville; DAVID WESTBROOK, Cainsville; JAS. MILLER, Paris; H. J. BRYAN, Mohawk; G. R. COON, Norwich; JOHN A. EDDY, Scotland.

A meeting was held at Burford, on Thursday, 22nd February, in the afternoon. The following programme was followed out:

Strawberry and Raspberry Culture, by G. R. Coon.
Rules and Prices for Pickers and Picking, by D. M. Lee.
Tomato Growing, by Alfred Ledger.
What are the Prospects of the Burford Canning Factory, by T. S. McIntee.
New Kinds of Fruits by David Greig.
Three Best Varieties of Strawberries for the County of Brant, by H. J. Bryan.
Pear Culture, by S. Hunter.
Canning of Fruit for Home Use, Mrs. (Dr.) Johnston.
The paper on Strawberry Culture, by G. R. Coon was as follows:

STRAWBERRY CULTURE.

I will give my mode of culture. I don't know if it will commend itself to others, but I have found it quite successful with me.

1st, I so arrange my strawberry plantation, that I either have a piece of ground summer-fallowed or ground that has been used for root crop. I manure in the fall late, just freezing up time, spreading it evenly over the ground. In the spring, harrow it the first thing, then plow not too deep and work down with the cultivator and harrow, finishing with roller. Then mark with a one-horse marker 3 ft. 10 in. one way and 2 ft. 8 in. the other. I use a six-tined fork to take up my plants with, not allowing the roots to dry in the sun or wind. Do not take up too many plants at a time. I use a spade made on purpose with a double blade standing one and a half inches apart at the top. The blade is only five inches wide, a foothold only on one side.

This is pressed in the ground about six inches and removed so as to leave a hole in the shape of a wedge. One boy follows and drops for two boys who set the plant in so as to leave the crown of the plant even with the top of the ground; in this way it is not difficult to get the dirt firmly packed about the roots.

I never water plants. As soon as the first weeds break the ground we start the cultivator and work them both ways, always hoeing before they appear to need it.

If the season is favorable the cultivator should be stopped about the 20th of July, and only cultivate the way the rows are intended to run.

Then use the hoe, placing the runners each way from the parent plant placing a lump of dirt on the runner to keep the wind from blowing it out of place. Cultivate and hoe as late in the fall as the ground will admit. As soon as the ground freezes sufficient to bear up the horses and waggon, cover with clean straw, not too heavy, else you may smother the plants. This straw is removed in the spring as soon as the plants fairly start to raise the straw. The straw need not be removed if it is thin enough to admit of the plant growing through.

FRUIT CANNING FOR HOME USE.

The following selection is taken from the paper on this subject read by Mrs. JOHNSTON :

A few suggestions can be given and which may, at least lead to discussion. A very good rule for canning small fruits and one that has met with great success is after making a syrup of the proper consistency to pack the fruit loosely in jars, pouring the syrup in afterwards. Have a vessel of cold water on the stove, place the jars in the water, allowing the fruit to boil about twenty minutes. Strawberries and raspberries canned in this way retain their flavor and color and remain whole. Plums, after being peeled are excellent put up in this manner. A good idea is to wrap two or three thicknesses of paper around the jars, as contact with the light affects the quality and color of the fruit.

An excellent rule for canning larger fruit such as peaches and pears is to place them in a steamer over a kettle of boiling water, laying first a cloth in the bottom of the steamer. After the fruit is steamed for about fifteen minutes drop each for a moment in the syrup, then place in cans, cover with the syrup and seal tightly.

GRIMBSY HORTICULTURAL SOCIETY.

The following are the officers of the Grimsby Horticultural Society organized 1895 :

President : J. H. Grout.

Vice-Pres.: C. W. Van Duser.

Sec.-Treas.: C. W. Van Duser.

Directors : Messrs. Wm. Forbes, A. G. Pettit, E. H. Read, James Doran, H. H. Anderson ; Mesdames—E. J. Palmer, R. J Hewat, P. H. Gamble and A. G. Pettit.

Auditors : Geo. Alexander and Thos. Johnson.

C. W. VAN DUSER,
Secretary.

WOODSTOCK HORTICULTURAL SOCIETY.

The following officers have been duly appointed for 1895 :

President : T. H. Parker.

Vice-President : D. W. Karn.

Directors : G. R. Pattullo, R. B. Thornton, Geo. Blake, Angus Rose, Fred Mitchell, J. S. Scarff, and Malcolm Schell.

Auditors : J. G. Wallace and Mayor Cole.

At the closing of the general meeting a meeting of the directors was held and Mr. R. B. Thornton was appointed secretary, and Mr. J. S. Scarff, treasurer. It was also decided that all members of the Horticultural Society be made members of the Ontario Fruit Growers' Associaton.

R. B. THORNTON,
Secretary.

WATERLOO HORTICULTURAL SOCIETY.

SIR.—The following gentlemen have been elected officers of the new Horticultural Society formed here, in affiliation with the Fruit Growers' Association of Ontario :

President : James Lockie.

Vice-President : Charles Moogk.

Directors : Mrs. Philip Hohmeier, Mrs. H. J. Grassett, Mrs. George Wegenast ; Messrs. C. M. Taylor, J. H. Winkler, George Bolduc, William Henry, William Raymo and J. H. Roos.

Auditors : Messrs. John Killer and Byron E. Bechtel.

JAMES LOCKIE,
President.

THE NIAGARA FALLS SOUTH HORTICULTURAL SOCIETY.

SIR,—The following officers have been duly elected for the year 1895, and we have made all our members to be also members of the Fruit Growers' Association of Ontario. The date of organization was Jan. 25th, 1895 :

President : T. G. Cadham.

Vice-President : Dr. W. W. Thompson.

Directors : Rev. Canon Bull, Reeve H. G. A. Cook, Mrs. Land, Miss L. McNally, E. Morden, George Law, Thomas Berriman, R. Cameron, Edward Skilton.

Secretary : E. Morden.

Treasurer : William Doran.

The Society, which starts with about 70 members, is made up of the leading fruit growers in Stamford township and the leading families in the village of Niagara Falls.

E. MORDEN,
Secretary.

THE LINDSAY HORTICULTURAL SOCIETY.

SIR,—We have had during the past year 132 members in the Society, distributed 132 journals on fruits and flowers, some monthly and some semi-monthly ; held 6 meetings, public and directors'. There was some interesting discussions on fruits and flowers at our annual meeting held January 10th. The following officers were appointed for the year 1895 :

President : Mr. Joseph Cooper.

Vice-President : Mr. W. M. Robson.

Sec.-Treas : F. J. Frampton.

Directors : Messrs. Thos. Connolly, Thomas Beall, Robert Speir, Joseph Rickaby, J. H. Knight, W. H. King, Mrs. T. Beall and Mrs. H. McLaughlin.

Auditors : Mr. John Dobson and Mr. William Flavelle.

F. FRAMPTON,
Secretary,
Lindsay.

APPENDIX III.

CATALOGUE OF FRUITS FOR USE OF JUDGES AT EXHIBITIONS.

APPLES.

EXPLANATORY NOTE.—In the plan of rating, all varieties are supposed to be perfect specimens; then the best varieties under each of three or four heads are rated at ten, and all the more or less inferior varieties by some figure less than ten. It frequently happens, however, even with the best varieties, that imperfect samples are exhibited. In such cases all values given in the Catalogue must be reduced one or more points each, for (1) lack of color, (2) undersize, (3) unevenness of size on plate, (4) wormy, scabby or illshapen specimens, (5) lack of stem or calyx, (6) polished fruits, *i.e.*, having bloom wiped off, or for any other thing which tends to change the natural appearance of the fruit. To aid judges still farther in the intelligent discharge of their duties, score cards have been prepared by the Association, copies of which may be had from the Secretary.

The column "Total Value" is for use when prizes are offered for fruits without designating the purpose for which such fruits may be required.

Name.	Season.	Quality.		Commercial value.		Total value.
		Dessert.	Cooking.	Home market.	Foreign market.	
Alexander	A	.....	9	9	10	28
American Golden Russet	W	9	8	8	9	34
American Summer Pearmain	S	3	1	2	.....	6
Arnold's Beauty	W	5	2	2	3	12
American Pippin	W	5	8	3	5	21
Adam's Pearmain	W	8	8	7	7	30
Autumn Strawberry	A	5	1	2	5	13
Bailey Sweet	W	4	8	4	4	20
Baldwin	W	2	5	7	8	22
Beauty of Kent	A	6	6	8	7	27
Ben Davis	W	1	3	8	9	21
Benoni	S	10	8	4	7	29
Belmont	W	3	6	4	6	19
Blenheim Pippin	W	6	7	9	10	32
Blue Pearmain	W	6	6	8	8	28
Bottle Greening	W	6	7	2	4	19
Bourassa	W	5	4	3	6	18
Cabashea	W	2	7	8	9	26
Canada Baldwin	W	6	8	8	9	31
Canada Reinette	W	4	8	5	7	24
Cayuga Red Streak	A	2	8	7	8	25
Chenango Strawberry	A	8	3	7	.....	18
Colvert	A	3	9	7	8	27
Cornish Gilliflower	W	1	.....	1	2	4
Cox's Orange Pippin	A	9	3	7	10	29
Cranberry Pippin	W	7	8	8	8	31
Cellini	W	2	8	7	6	23
Domine	W	5	7	6	7	25
Drap d'Or	A	2	6	3	5	16
Detroit Black	A	.....	4	2	4	10
Duchess of Oldenburgh	S	6	10	10	10	36
Dyer	A	7	5	3	.....	.....
Early Harvest	S	9	3	9	.....	21
Early Joe	S	8	3	3	.....	14
Early Strawberry	S	8	2	7	.....	17
Edgar's Red Streak	W	5	7	7	8	27
Ella	W	2	4	3	5	14
Esopus Spitzenburg	W	9	7	9	10	35
Fallawater	W	7	8	8	9	32
Fall Jenetting	A	3	7	7	7	24
Fall Orange	A	4	7	6	3	20
Fall Pippin	A	6	8	7	7	28
Flushing Spitzenburg	W	6	6	6	7	25
Fameuse	A	10	5	10	8	33

NOTE.—In the first column the letter S denotes summer, A autumn and W winter.

CATALOGUE OF FRUITS.—APPLES.—*Continued.*

Name.	Season.	Quality.		Commercial value.		Total value.
		Dessert.	Cooking.	Home market.	Foreign market.	
Fall Queen (*See* Haas)						
Gloria Mundi	W		8	6	8	22
Golden Russet (English)	W	8	7	8	9	32
Golden Sweet	A	2	4	1		7
Grand Sultan	A	5	8	6	6	25
Gravenstein	A	9	9	10	10	38
Green Newton Pippin	W	9	4	6	8	27
Grimes' Golden	W	9	2	6	7	24
Haas (*See* Fall Queen)	A	5	7	7	6	25
Hawley	S	6	5	5		16
Hawthornden	A	2	8	7	7	24
Holland Pippin	A	6	8	7	7	28
Hubbardston Nonsuch	W	7	8	8	8	31
Hurlbut	W	8	8	8	8	24
Irish Peach	S					
Jeffries	A	7	6	6	7	26
Jersey Sweeting	A	1	3	1		5
Jonathan	W	9	7	7	8	31
Kentish Fillbasket	A		8	8	8	24
Keswick Codlin	A	1	9	6	7	23
King of Tompkins County	W	8	10	10	10	38
Lady	W	9		1	9	19
Late Strawberry	A	7	5	5	7	24
Lawyer	W	5	7	4	5	21
Lord Suffield	A	3	8	6	7	24
Lord Duncan	A	2	9	7	6	24
London Pippin	W		8			
Lowell	A	5	7	4		
Lord Burleigh	A	2	9	5		16
La Rue	W	4	9	8	8	29
Maiden's Blush	A	3	8	9	8	28
Mann	W	4	7	6	8	25
Magog Red Streak	W	3	7	5	7	22
McIntosh Red	W	10	7	7	8	32
Melon	W	8	8	7	8	31
Minister	A	4	6	6	5	21
Monmouth Pippin	W	6	8	6	7	27
Mother	A	8	7	6	6	27
Munson Sweet	A	1	3	2		6
Newton Spitzenburg	A	7	8	6	7	28
Northern Spy	W	8	10	10	10	38
Newton Pippin	W	9	9	7	10	35
Ontario	W	9	10	10	10	39
Peck's Pleasant	W	7	7	6	8	28
Pennock	W	5	7	7	8	27
Pewaukee	W	6	8	8	8	30
Peach	A					
Phœnix	W	4	7	7	8	26
Pomme Grise	W	9		5	7	21
Pomme Grise d'Or	W	10		6	8	24
Porter	A	5	4	5	3	17
Priestly	W	4	5	6	7	22
Primate	S	7	6	6		19
Prenzea	A	9	9	5	5	28
Princess Louise	W	10	7	8	8	33
Pumpkin Sweet	A		4	1		5
Pumpkin Russet	A	1	6	4	5	16
Pomme Royale (*See* Dyer)						
Rambo	A	5	1	2	5	13
Rawles Janet	W	4	5	3	5	17
Red Astrachan	S	5	7	8		20
Red Belle-fleur	A	2	4	2		8
Red Canada	W	6	6	7	8	27
Red Cathead	A	6	8	7	7	28
Red Russet	W	5	6	7	7	25
Red Bietigheimer	A					
Rhode Island Greening	W	8	10	8	8	34

CATALOGUE OF FRUITS.—APPLES.—*Continued.*

Name.	Season.	Quality.		Commercial value.		Total value.
		Dessert.	Cooking.	Home market.	Foreign market.	
Ribston Pippin	W	10	8	8	10	36
Roxbury Russet	W	6	8	8	9	31
Scarlet Pearmain	A	5	6	5	6	22
Shiawassee Beauty	A	7	6	6	.....	19
Smith's Cider	W	1	4	.....	1	6
Smokehouse	A	3	6	4	6	19
Sops of Wine	S	2	5	2	.....	9
St. Lawrence	A	7	8	8	5	28
Stump	A	5	6	5	.....	16
Summer Rose	S	6	6	4	.....	16
Swaar	W	7	2	1	4	14
Swaize Pomme Grise (*See* Pomme Grise d'Or)						
Stark	W	2	2	7	8	19
Snow (*See* Fameuse)						
Talman Sweet		6	5	3	4	18
Tetofsky	W	7	9	6	.....	22
Trenton	S	10	5	9	9	33
Twenty Ounce (*See* Cayuga Red Streak)	A					
Vadevere	A	6	5	4	6	21
Wagener	W	8	7	6	7	28
Wallbridge (*See* Edgar's Red Streak)						
Wealthy	W	8	6	9	9	32
Westfield-Seek-no-Further	W	7	7	7	8	29
White Astrachan	S	1	2	1	.....	4
William's Favorite	W	5	7	5	6	23
Wine Sap	W	7	.....	1	3	11
Wine	W	7	7	8	8	30
Yellow Belle-fleur	W	8	7	5	5	25
Yellow Transparent	S	6	7	6	.....	19

GRAPES.

(*This list is subject to revision each year.*)

Varieties.	Color.	Season.	Quality for table.	Shipping value.	Market value.	Total.
Agawam (Rog. 15)	R	L	8	10	9	27
Allen's Hybrid	W	M	5	2	4	11
Amber Queen	R	M	5	4	4	13
Amber	R	L	1	3	2	6
Aminia (Rog. 39)	B	M	8	10	6	24
Ann Arbor	W	E	3	2	3	8
August Giant	B	M	5	1	5	11
Augusta	B	M	6	.....	.....	.....
Barry (Rog. 43)	B	M	7	9	7	23
Brighton	R	E	9	6	8	23
Black Eagle	B	L	1	3	2	6
Black Pearl	B	L	1	3	2	6
Burnett	B	M	5	5	4	14
Canada	B	M	2	3	1	6
Catawba	R	L	9	8	9	27
Champion	B	E	2	5	5	12

LIST OF ABBREVIATIONS.—R red, W white, B black, L late, E early, and M medium.

CATALOGUE OF FRUITS.—GRAPES.—*Continued.*

Varieties.	Color.	Season.	Quality for table.	Shipping value.	Market value.	Total.
Clinton	B	L	.....	5	2	7
Concord	B	M	7	6	8	21
Cottage	B	E	5	5	4	14
Creveling	B	E	6	6	4	16
Croton	W	E	4	3	3	10
Cynthiana	B	L	1	2	1	4
Courtland	B	E	2	5	5	12
Delaware	R	E	10	7	9	26
Diana	R	L	6	8	7	21
Duchess	W	L	5	6	6	17
Dracut Amber	R	E	2	6	4	12
Eaton	B	M	7	5	3	15
Early Dawn	B	M	6	4	3	14
Elvira	W	L	1	2	1	4
Empire State	W	L	3	4	4	11
Early Ohio	B	E	3	6	5	14
Eumelan	B	E	6	5	5	16
Eldorado	W	M	7	5	2	14
Etta	W	L	2	4	3	9
Early Victor	B	E	5	4	3	12
Essex (Rog. 41)	B	L	3	7	6	16
Faith	W	E	2	2	3	7
Florence	B	E	2	2	3	7
Goethe (Rog. 1)	R	L	8	5	5	18
Gaertner (Rog. 14)	R	M	8	6	6	20
Hartford	B	E	3	5	6	14
Herbert (Rog. 14)	B	M	6	8	7	21
Highland	B	L	3	4	2	9
Hayes	W	M	5	2	3	10
Herbemont	B	L	1	2	3	6
Iona	R	L	8	7	6	21
Isabella	B	L	3	7	6	16
Ives	B	E	2	5	5	12
Israella	B	L	3	6	4	13
Janesville	B	E	2	3	3	8
Jessica	W	E	5	5	5	15
Jefferson	R	L	6	4	5	15
Jewell	B	M	4	4	2	10
Lady	W	E	8	3	8	19
Lady Washington	W	L	3	5	3	11
Lindley (Rog. 9)	R	E	10	9	9	28
Massasoit (Rog. 3)	R	E	6	4	7	17
Martha	W	M	6	5	3	14
Merrimac (Rog. 49)	B	L	7	9	6	22
Moore's Early	B	E	7	6	9	22
Moyer	R	E	7	7	9	23
Mills	B	M	6	7	3	16
Moore's Diamond	W	E	7	7	7	21
Marion	B	L	1	4	2	7
Niagara	W	M	8	5	9	22
Noah	W	L	1	5	3	9
Norton	B	L	1	5	2	8
Northern Muscadine	R	M	2	6	6	14
Oneida	R	M	3	2	4	9
Ontario	B	M	2	4	4	10
Othello (Arnold's No. 1)	B	L	2	3	2	7
Perkins	R	E	2	6	6	14
Pocklington	W	M	6	6	6	18
Prentiss	W	L	5	7	4	16
Poughkeepsie Red	W	E	6	6	7	19
Pearl	R	L	1	2	1	4
Rebecca	W	M	8	4	4	16
Requa (Rog. 28)	R	M	7	8	7	22
Rentz	B	M	1	2	2	25
Rockingham	B	M	7	6	8	21
Roger (No. 17	B	M	6	6	6	18
Roger No. 32	R	L	3	7	6	16

CATALOGUE OF FRUITS.—GRAPES.—*Continued.*

Varieties.	Color.	Season.	Quality for table.	Shipping value.	Market value.	Total.
Roger No. 33	B	M	5	7	6	18
Roger No. 11	B	M	7	8	7	22
Salem (Roger 22)	R	M	8	8	8	24
Sanasqua	B	L	5	5	5	15
Secretary	B	M	3	4	3	10
Telegraph	B	M	3	5	3	11
Transparent	W	L	1	4	1	6
Triumph	W	L	1	5	1	7
Taylor	W	L	1	4	2	7
Ulster Prolific	R	M	4	5	5	14
Union Village (*See* Ontario)						
Vergennes	R	L	6	10	8	24
Victor (*See* Early Victor)						
Walter	R	M	6	7	7	20
Worden	B	E	9	4	8	21
White Ann Arbor	W	E	4	4	4	12
Wilder (Rog. 4)	B	M	8	9	8	25
Wyoming Red	R	E	5	6	7	18
Woodruff Red	R	M	4	6	5	15

PEARS.

——	Dessert.	Home market.	Total.
Ananas d'Ete	4	6	10
Anjou	9	10	19
Bartlett	9	10	19
Belle Lucrative	7	6	13
Beurre Bosc	9	9	18
Beurre Giffard	8	9	17
Beurre Hardy	8	8	16
Beurre Gris d'Hiver	4	4	8
Beurre Superfine	6	5	11
Brandywine	7	8	15
Buffam	5	4	9
Clairgeau	5	9	14
Clapp's Favorite	7	8	15
Dana's Hovey	8	4	12
Dearborn	5	4	9
Dempsey	8	9	17
Diel	5	7	12
Doyenne Bcussock	9	9	18
Doyenne d'Ete	5	4	9
Doyenne du Comice	8	7	15
Doyenne Grey	7	5	12
Doyenne White	8	7	15
Duchess d'Angouleme	7	8	15
Flemish Beauty	8	8	16
Frederick Clapp			
Glout Morceau	6	5	11
Goodale	8	8	16
Howell	8	9	17
Jones	6	4	10
Josephine de Malines	10	6	16
Kieffer	4	6	10
Kirtland	4	4	8
Lawrence	8	8	16
Louise Bonne	6	8	14
Manning's Elizabeth	7	5	12

CATALOGUE OF FRUITS.—PEARS.—*Continued.*

——	Dessert.	Home market.	Total.
Mount Vernon	8	5	13
Osband's Summer	6	5	11
Petite Marguerite	5	4	9
Pres't. Drouard	7	8	15
Reeder	6	4	10
Seckel	10	5	15
Sheldon	10	9	19
Souvenir de Congres	4	6	10
Swan's Orange	5	7	12
Tyson	8	6	14
Triumphe de Vienne	8	8	16
Vicar	3	4	7
Winter Nelis	8	8	16

DISTRICT FRUIT LIST.—APPLES.

Showing the varieties considered most desirable for planting in the various Agricultural Districts in Ontario.

DISTRICT No. 1.—Stormont, Dundas, Glengarry, Prescott and Cornwall.

Summer.—Yellow Transparent, Duchess of Oldenburgh.
Autumn.—Alexander, Fameuse, Gideon, St. Lawrence.
Winter.—La Rue, Pewaukee, Golden Russet, Ben Davis, Talman Sweet.

DISTRICT No. 2.—Lanark, Renfrew, City of Ottawa, Carleton and Russell.

Summer.—Yellow Transparent, Duchess of Oldenburgh.
Autumn.—Alexander, Montreal Peach, Wealthy and Haas.
Winter.—Pewaukee, Golden Russet, Scott's Winter, Talman Sweet and Edgar's Red Streak.

DISTRICT No. 3.—Frontenac, City of Kingston, Leeds, Grenville and Brockville.

Summer.—Yellow Transparent, Duchess of Oldenburgh and Red Astrachan.
Autumn.—Alexander, Wealthy and St. Lawrence.
Winter.—Golden Russet, Pewaukee, La Rue, Ben Davis and Red Canada.

DISTRICT No. 4.—Hastings, Prince Edward, Lennox and Addington.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Alexander, Trenton, Gravenstein and Wealthy.
Winter.—Ontario, Hubbardston's Nonsuch, Pewaukee, Ben Davis and Cranberry Pippin.

DISTRICT No. 5.—Durham, Northumberland, Peterborough, Victoria and Haliburton.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Alexander, Colvert, St. Lawrence and Gravenstein.
Winter.—Ontario, Hubbardston's Nonsuch, Pewaukee, Ben Davis and Blenheim Pippin.

DISTRICT No. 6.—York, Ontario, Peel, Cardwell and City of Toronto.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Alexander, Gravenstein, Red Beitigheimer and Wealthy.
Winter.—Golden Russet, Pewaukee, Ontario, Ben Davis and Hubbardston's Nonu ch.

DISTRICT No. 7.—Wellington, Waterloo, Wentworth, Halton, Dufferin and City of Hamilton.

Summer.—Yellow Transparent, Red Astrachan and Duchess of Oldenburgh.
Autumn.—Gravenstein, Colvert and Wealthy.
Winter.—Golden Russet, Ontario, Blenheim Pippin, Baldwin and Cranberry Pippin.

DISTRICT No. 8.—Lincoln, Welland, Haldimand and Monck.

Summer.—Duchess of Oldenburgh and Red Astrachan.
Autumn.—Gravenstein, Ribston Pippin and Wealthy.
Winter.—Blenheim Pippin, Ontario, Princess Louise, Golden Russet and Cranberry Pippin.

DISTRICT No. 9.—Elgin, Essex, Oxford and Norfolk.

Summer.—Duchess of Oldenburgh and Red Astrachan.
Autumn.—Gravenstein, Twenty Ounce and Fall Pippin.
Winter.—Blenheim, Pippin, Ontario, Baldwin, R. I. Greening and Golden Russet.

DISTRICT No. 10.—Huron, Bruce and Grey.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Gravenstein, Wealthy and Colvert.
Winter.—Pewaukee, Ontario, Baldwin, Hubbardston's Nonsuch and Cranberry Pippin.

DISTRICT No. 11.—Middlesex, Perth and City of London.

Summer.—Duchess of Oldenburgh and Yellow Transparent.
Autumn.—Gravenstein, Colvert, Alexander and Fall Pippin.
Winter.—Golden Russet, Ribston Pippin, Ontario, Hubbardston's Nonsuch and Cranberry Pippin.

DISTRICT No. 12.—Essex, Kent and Lambton.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Gravenstein, Chenango, Strawberry, Wealthy and Lowell.
Winter.—Ontario, Blenheim Pippin, Baldwin, R. I. Greening and Golden Russet.

DISTRICT No. 13.—Algoma, Simcoe, Muskoka and Parry Sound.

Summer.—Duchess of Oldenburgh and Yellow Transparent.
Autumn.—Alexander, Colvert, Red Beitigheimer and St. Lawrence.
Winter.—Pewaukee, Golden Russet, Scott's Winter, La Rue and Wealthy.

DISTRICT FRUIT LIST.—GRAPES.

DISTRICT No. 1:

Black.—Champion, Worden, Early Victor, Moore's Early.
Red.—Delaware, Lindley Moyer, Wyoming Red.
White.—Eldorado, Niagara, Jessica, Vergennes.

DISTRICT No. 2:

Black.—Barry, Rog. 17, Herbert, Moore's Early, Worden.
Red.—Delaware, Gaertner, Norwood, Vergennes, Lindley.
White.—Duchess, Kensington, Moore's Diamond, Lady.

DISTRICT No. 3:

Black.—Champion, Moore's Early, Worden, Hartford.
Red.—Lindley, Brighton, Delaware.
White.—Moore's Diamond, Jessica, Eldorado.

DISTRICT No. 4:

Black.—Worden, Moore's Early, Early Victor.
Red.—Wyoming Red, Delaware, Moyer.
White.—Jessica, Moore's Diamond, Niagara.

DISTRICT No. 5:

Black.—Champion, Worden, Wilder.
Red.—Brighton, Delaware, Salem, Lindley, Agawam.
White.—Niagara.

DISTRICT No. 6:

Black.—Worden, Moore's Early, Champion.
Red.—Brighton, Lindley, Delaware, Wyoming Red.
White.—Jessica, Niagara.

DISTRICT No. 7:

Black.—Concord, Worden, Rog. 4—44, Moore's Early.
Red.—Rog. 9—15, Vergennes, Delaware, Brighton.
White.—Niagara, Moore's Diamond.

North Lake District:

Black.—Champion, Worden, Rog. 4, Moore's Early.
Red.—Wyoming Red, Salem, Rog. 9, Delaware, Brighton.
White.—Jessica, Lady, Niagara.

District No. 8:

Black.—Concord, Worden, Rog. 44, Moore's Early.
Red.—Rog. 9—15, Vergennes, Delaware, Brighton.
White.—Niagara, Moore's Diamond, Pocklington.

District No. 9:

Black.—Worden, Concord, Rog. 4—44, Moore's Early.
Red.—Delaware, Lindley, Agawam, Brighton.
White.—Niagara, Pocklington.

District No. 10:

Black.—Concord, Moore's Early, Wordon.
Red.—Brighton, Delaware, Lindley.
White.—Niagara, Lady.

Lake Shore Division:

Black.—Concord, Worden, Moore's Early, Barry.
Red.—Agawam, Brighton, Lindley.
White.—Niagara, Lady.

District No. 11:

Black.—Concord, Worden, Rog. 19, Rog. 4.
Red.—Rog. 9—15, Brighton. Delaware.
White.—Niagara, Moore's Diamond, Jessica.

District No. 12:

Black.—Concord, Worden, Moore's Early, Hartford.
Red.—Delaware, Walter, Rog. 15—22, Brighton.
White.—Niagara, Prentiss, Lady.

District No. 13:

Black.—Worden, Moore's Early, Champion.
Red.—Delaware, Lindley, Wyoming Red.
White.—Jessica, Moore's Diamond, Lady.

In compiling the foregoing grape lists we have consulted the directors, as well as the leading fruit growers throughout the several districts. We have also tried to frame the lists so as to advise the planting of such varieties as bear the highest general points for each district for hardiness, productiveness, etc., shipping quality of fruit, and commercial values.

Report of Committee.

APPENDIX IV.

NOTES ON VARIETIES OF FRUITS.

CONTRIBUTED BY MEMBERS OF THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

OUR OUT-DOOR GRAPES AND THEIR DEVELOPMENT FROM THE NATIVE SPECIES OF NORTH AMERICA.

BY W. MEAD PATTERSON, CLARENCEVILLE. QUE.

As far as limits will permit, it will be our purpose to take a retrospective course along the pathway of the development of the grape, from the period of the discovery of this continent to the present day. The first colonist of North America found wild grapes in profusion and distinguished the species as the Fox and Frost grape. As early as 1564 wine was made of them. An early writer on the subject tells us, the Rev. F. Higginson of the Massachusetts Colony wrote home in 1629, "Excellent vines are here up and down the woods, our Governor has already planted a vineyard with great hope of increase."

Grapes were found by the first settlers of Canada along the St. Lawrence as far north as the Isle of Orleans, and we conclude that they were in abundance from the fact of its being called by Jacques Cartier "Isle de Bacchus." Indeed from early accounts our ancestors showed equally as much enthusiasm over the grapes found indigenous to the country, as that evinced by us in this last half of our century over the descendants of the same given us by nature and art.

The late Prof. Asa Gray arranges the genus *vitis* of North America into four divisions, viz.: *Vitis Labrusca*, or Fox grape; *Vitis cordifolia*, or Frost grape; *Vitis vulpina*, *muscadine*, or southern Fox grape; and *Vitis aestivalis*, or Summer grape. The great array of varieties now in cultivation are the result of either spontaneous or of artificial hybridizing.

Except in California and Mexico attempts on this continent to introduce the European species of grapes have ultimately proved failures. While one of our native species, from the resistant power of its roots to the *phylloxera*, has given the European vineyardist valuable stock for grafting upon, that have saved their vineyards from total destruction.

To the *Vitis labrusca* of Linnæus we owe the greater number of our present varieties. Its native home is east of the Alleghany Mountains, from South Carolina extending north to Canada. It adapts itself to varied soils and conditions, attaining the greatest size in the granitic soil of New England. From the class known as the northern *labrusca* our most valuable hybrids have been obtained.

The persistence of this type is so marked that where its existence as forming one of the parents of an hybrid has been in doubt, the question has been determined by planting the seeds and the reversion of some of the seedlings settled the point.

The first variety of this species that obtained wide celebrity was introduced by Mr. R. Prince of Flushing, Long Island, about 1820. He obtained it from Mrs. Isabella Gibbs, who discovered it growing wild in North Carolina in 1816 and brought it north.

Prince propagated it and called it the Isabella, and ten years later he published a treatise on the grape. It is cultivated now to a very limited extent, and is found too late for high latitudes.

The Isabella has played its part in rearing a numerous family of children, but they being of the southern type of the *labrusca*, but a few are in favor North.

One of them, the Adirondac, was introduced in 1852, though of surpassing excellence, did well for a few years in favorable localities, but from inherent defects was generally discarded, even in its native home on lake Champlain. The Catawba, a native of North Carolina, was brought to notice by Major John Adlum, of Georgetown, D.C., who published the first American work on grapes in 1825, under the quaint title of "A Memoir on the Cultivation of the Grape." In it he claimed that in introducing the Catawba he conferred a greater benefit upon the American nation than he would have done by paying off the national debt. In a very short time the Catawba was extensively cultivated along the Ohio river, and Nicholas Longsworth, of Cincinnati, manufactured large quantities of wine of it. From disease overtaking the vine, the extensive vineyards of southern Ohio were destroyed, but in the lake region of central New York it found a more congenial home and is now flourishing, supplying our markets in winter with a grape having few equals as a long keeper. The Diana, a seedling of Catawba, was introduced to public notice in 1843 by Mrs. Diana Castore, of Boston, Mass., and was quite popular for a while; though not as productive as its parent, it is considered by some to be better and is still in favor south, but mainly for its keeping qualities.

In 1849, Ephraim W. Bull, of Concord, Mass., announced the discovery of the widely famous Concord. After it had captured public favor he was asked how he obtained it and his reply was "—I was looking about for the best grape which met the necessary conditions of hardiness, vigorous growth, size of berry, early ripening, and, with these conditions, as good flavor as the wild grape affords. At the foot of a hill on a woodland path leading to the river, there I found an accidental seedling in 1843. It was very full of fruit, handsome and sweet, and the whole crop had fallen to the ground before August was out. Here was my opportunity. I planted the grapes at once and got many vines, most of them harsh and wild, but one of them bore a single bunch which I found ripe on the 10th September, 1849, six years from sowing the seed. This was the Concord."

Mr. Bull continued his efforts, and succeeded in establishing a strain of seedlings giving new grapes to the country every year. Its progeny could be numbered by the hundred, but for our present purpose only those tested here will be given, namely: varieties the result of natural variation or other parent uncertain, Moore's Early, Worden, Lady, Martha, Eva, Pocklington, Norwood, Cottage, Eaton, Rockland Favorite, and the numerous Concord seedlings of the late T. B. Miner, of New Jersey.

Varieties definitely known to be crossed with Delaware are, Duchess, Nectar, and most of the late John Burr's seedlings. With Iona are Jefferson and Highland. Allen's hybrid crosses are El Dorado and Lady Washington. Niagara is claimed to be crossed with Cassidy. Woodruff's Red by Catawba, Brighton by Diana, Hamburg.

The foreign crosses are also numerous but successful only in the south.

In 1850 Hartford Prolific was introduced by Steele of Hartford, Conn., meeting with favor, being the earliest variety then known, but the effect of dropping its berry when ripe detracted from its value as a market grape. It is still in favor north. The most prominent *labruscas* enumerated as being discovered in the first half of this century were natural seedlings, or, as called by some, "Spontaneous Hybrids." Now we shall enter the era of artificial hybridization. By this process the first successful products were given to the world in 1856 by Edward S. Rogers, at Salem, Mass. The direction of his efforts were in impregnating the Mammoth *labrusca* of New England with varieties of the species *Vitis vinifera* of Europe. As a result he retained and designated, by number, over fifty new varieties. In time several of these became the leading grapes of commerce, viz: Massasoit, Lindley, Herbert, Barry, Aminia, and Salem, the special merits of which may perpetuate his name in connection therewith for many generations. The success attending Rogers' efforts gave a surprising impetus to attempts in this direction by others. Unfortunately for Rogers his zeal was not proportionate to his means, and

his valuable hybrids, which in our time would have assured him a fortune, left him comparatively a poor man.

Dr. Stephen W. Underhill, of Croton Point, on the Hudson, an enthusiast in this field, at an early day brought out several varieties by *labrusca* crossings. Those tested in Canada were Irving, Senasqua, and Black Eagle, and a Delaware cross called Croton. Further south these have stood the test of time.

The late Peter C. Dempsey, of Trenton, Ont., followed the same path, and produced Burnet, by Black Hamburg crossing. J. H. Ricketts, and the late A. J. Caywood, both on the Hudson, originated varieties of value by crossing with the *labrusca*. Rickett's crossings, mostly on the *riparia* species, now number several hundred, though comparatively few have attained prominence. The popular varieties, Delaware, Creveling, Taylor, as well as some of Rommel's productions, are claimed by some authorities as partaking of *labrusca* blood.

To conclude, this type of grapes, Cottage, Telegraph, Belvidere, Woodruff Red, Jessica, Wyoming Red, and Champion, have in recent years given us varieties prominent for early ripening, especially the Champion, which is much valued north, and still holds the palm as an extra early and profitable grape. These latter are spontaneous productions or variations of the original type by which nature, in her origin of species, has been so bountiful to mankind in the present century.

We will now have to consider briefly the *Vitis cordifolia* of our native species, known as the Frost grape, or rather its subdivision named by Michaux, *Vitis riparia*. This species is not only distributed well to the north, along the banks and islands of our Canadian rivers, but its geographical boundaries extend south and west over a great part of this continent. Nature, in this species, has supplied us with wine as well as an edible grape, readily propagated by cuttings. Dr. Despetis, in his study of the *riparia*, has noted over 300 sub-varieties, of which the Clinton is the most prominent. The Taylor, as before noted, thought to be an accidental cross with *labrusca*. has given the south valuable wine grapes in Elvira, Noah, Missouri Reisling, Grein's Golden, and Rommel's Hybrids, viz: Amber, Pearl, Transparent, Faith, July, and others. While Ricketts of Newburg, N.Y., with Clinton, produced Bacchus, Empire State, Naomi, Peabody, Pizarro, Quassaick, Secretary, and Waverly, six of these have been tested in Clarenceville and all but Bacchus discarded. Three of these flourished for a few years and then gradually dwindled out. Peabody and Waverly were exquisite in quality. Perhaps if their foliage had been sprayed by mixtures now in use other results might have been obtained. The Clinton, crosses of Arnold of Paris, Ont., have fared the same here. If some of the finest children of the *riparia* species are to be saved we must interpose with spraying mixtures.

In conclusion a brief tribute is due to prominent propagators, whom with those already named, have contributed valuable varieties to our northern grape list. The Hon. Geo. W. Campbell, of Ohio, in introduction of "Lady" has given us the most valuable extra early white variety, and will soon introduce an extra early black, to be known as "Campbell's Early." Few men have taken more interest in popularizing grape culture.

Samuel Miller, of Missouri, discoverer of Martha, still a popular white, can look back over a useful life's work in this and other branches of fruit culture. John B. Moore, of Concord, Mass., will be remembered in connection with Moore's Early: Jacob Moore, of Brighton, N. J., with Brighton amd Moore's Diamond: Jacob Rommel, of Missouri, with Rommel's Early Black. These names, with those of Bull, Rogers, Caywood, Burr, Ricketts, Dempsey, Prince, and Underhill, veterans who have mostly passed away, will survive in connection with their creations for many generations.

THE FALL AND THE WINTER BLENHEIM ORANGE.

By E. B. Edwards, Peterboro'.

I think I am beginning to understand the conflicting statements as to the Blenheim orange being called by some people a fall apple, while I called it a winter apple. Following the dry August, the whole of the apples on four or five Blenheim orange trees

began to fall early in September, and the "equinoctial" of the 22nd of September stripped the trees. The fruit was large, fully ripe and colored, and showed that it would not keep at all. At the same time eight or ten other trees alongside held their fruit firmly through all the winds, and the apples on them were clearly immature, not fully grown, not colored, and hard and firm. I sent specimens to Mr. Craig. He pronounced those that had fallen to be the typical Blenheim—the others a later variety of the same. He adds, "In this instance the variation is worth perpetuating." I quite agree with him, for the later ones will keep till the end of winter, or even into May, while the early ones will hardly keep till Christmas. The difference between the two classes of trees has been noticed before, but it has never been so noticeable as this year, when the dry season ripened the earlier variety before its time, while the September rains apparently checked the ripening process in the later variety.

THE HARDINESS OF THE CANADA RED (RED CANADA).

By R. W. Shepherd, Jr., Montreal, Que.

In a paper read by me before the Farmers' Congress, at the City of Quebec, in January, 1893, and which was afterwards published in the last June number of the *Horticulturist*, I mentioned Canada Red as having proved to be a very hardy tree, after upwards of three years of trial at Hudson-on-the-Ottawa. It is extraordinary that the fact of the hardiness of this variety does not seem to have been brought prominently before the notice of fruit growers heretofore. The test of the hardiness of Canada Red, to my mind, is conclusive. The orchard at Mount Victoria, Hudson, Ont., is situated within two miles of my own at Como, and I have had ample opportunity to observe the present condition of the trees of that orchard, and to know of the dreadfully neglectful way in which these trees have been cared for, ever since the death of the late Mr. George Matthews (some twenty years ago), who planted out the orchard. The farm was sold shortly after Mr. Matthews' death to a Montreal gentleman who never, I understand, visited the place, and the several tenants who have rented it, from year to year, of course never took the slightest trouble to cultivate the orchard properly, or even to prune the trees. The soil of that orchard is the poorest quality of sand, so poor that the present tenant has told me he sometimes fails to get even a crop of oats off it in dry seasons. Under such conditions it is surprising that any of the trees planted by Mr. Matthews, nearly thirty-five years ago, are alive at all. Some of the trees were obtained from Montreal, such as the Fameuse, St. Lawrence, Pomme Grise and Bourassa, and of these only a few survive. I distinctly remember Mr. Matthews saying that he bought a number of his trees at Rochester, N.Y. Among these, I think only Canada Red and some Talman Sweet survive. But the best trees by far, the healthiest and most productive, are the last named. The present tenant says he has frequently taken six barrels per tree, of good marketable apples, off them, and obtained some years four dollars per barrel. For many years the several tenants of Mount Victoria sold the Canada Red under the name of Red Spitz. I never took particular notice of this apple until four years ago, when I was struck by the fine, clean, healthy appearance of the fruit. Knowing that Red Spitz could not be the correct name, and at the same time being aware that many of the trees of this orchard were brought from the state of New York, I sent specimens to several pomologists, among others to Mr. L. Woolverton, of Grimsby, and all pronounced the variety Canada Red.

Fine specimens were sent from this province to the World's Fair in the fall of 1892, and placed in cold storage there, with other Quebec apples, and were exhibited until the disastrous fire in the cold storage building destroyed all the fruit, of 1892, in July last. No specimens of Canada Red were sent to the fair from this province in 1893.

In this connection it is interesting to quote a letter recently received from J. C. Plumb, of Milton, Wisconsin, an authority in that state on fruit. He says: "Mr. Hoxie (who was in charge of the Wisconsin fruit), brought from the World's Fair several specimens from the Canada fruit, one labelled 'Red Canada,' which is our Baltimore—

See Downing, pages 86 and 322. The tree Red Canada is much less hardy and vigorous, but bears double the fruit here, and in quality far better than the Baltimore. If the Baltimore bears well with you it is valuable. Its fruit is larger, cavity smaller, stems shorter, calyx closed, basin much more shallow than Red Canada. It bears almost entirely at the extremity of last year's shoots, which are thus enlarged at that point, making quite a bunch, where last year's fruit was borne."

I wrote Mr. Plumb and stated that the specimens taken to Wisconsin in the fall of 1893, by Mr. Hoxie, could not have come from the Province of Quebec, but probably from Ontario—and, furthermore, I am of the opinion that Downing's description of Red Canada more correctly corresponds with the fruit as grown at Hudson than that of Baltimore.

Downing, however, says "Red Canada is not now much planted on account of its small size and poor fruit." This has not been the experience of those who have grown that variety here. Under the most careless cultivation, and the disadvantageous conditions above mentioned, the fruit is, at least, *medium* in size and often above medium. It will be interesting to hear something from growers in Ontario who have had experience with both Red Canada and Baltimore.

THE SARAH RASPBERRY.

By JOHN CRAIG, HORTICULTURIST, C. E. F., OTTAWA.

SARAH. Produced in London, Ont,, by Prof. Saunders, from seed of Shaffer's Colossal. Plant a moderate grower, suckering freely, and propagating naturally only in this way. The foliage seems to be intermediate between the European raspberry *Rubus idaeus* and the American *Rubus strigosus*. The canes have been affected to some extent by anthracnose, but not more than Cuthbert or Marlboro' growing alongside. Fruit large, round; drupes large, deep garnet, firm, very juicy, pleasantly acid and exceptionally rich. A few ripe berries were found last year, and this year, at the time of the first picking of Cuthbert, but the main crop did not ripen till the season of Cuthbert was over, the last picking taking place each year from the 8th to 12th August.

A striking characteristic of this variety is its habit of ripening the fruit in consecutive order and much regularity, beginning with the terminal clusters of each branch. Of course this is in a measure true of all red raspberries, but none that I know of carry the peculiarity to the same extent.

NOTES ON VARIETIES BY THE SECRETARY.

APPLES.

The Talman Sweet. The Talman Sweet has great value as food for stock; the food is easier grown than carrots, and excels them as food for our horses. In the home it is highly prized by many people as a dessert apple, and those who are fond of bread and milk will find it a delicious addition to that wholesome article of diet, if first well baked in the oven. In the eastern states the Talman Sweet is considerably grown for market, because in such cities as Boston there is a special demand for this fruit. In Canada there is little use in growing it for market, because there is no demand for sweet apples in either the English or the Canadian markets.

The Talman Sweet is a native of Rhode Island. The tree is a vigorous grower, with an upright spreading top.

The fruit is thus described by Mr. Charles Downing: Form, nearly globular. When fully ripe, whitish yellow, with a soft blush on one side, and generally a line running from stem to calyx. Stalk rather long and slender, inclining to one side, and inserted in

a rather wide, shallow, but regular cavity. Calyx set in a small basin, slightly depressed. Flesh quite white, rather firm, fine-grained, with a rich, sweet flavor. November to April.

As a stock on which to top graft other varieties, the Talman Sweet cannot be excelled. It is very hardy, of healthy and vigorous growth, very productive and seems to impart to the variety top grafted upon it, some of its excellent qualities. The King is usually a poor bearer, but when grafted on the Talman Sweet stock, it not only produces fruit of better quality, but it is quite productive. We are so convinced of its excellence in this regard, that, if planting a new orchard to-day, we would be inclined to plant all Talman, and later on to top-graft them with the required varieties.

Here is an article by the late Mr. Nicol, of Cataraqui, for many years one of the directors of the Ontario Fruit Growers' Association, on this very subject, which is sufficiently opportune to be inserted here.

Many of the choicest varieties of apples, such as the Northern Spy, Ribston Pippin, R. I. Greening, Gravenstein, Baldwin and King of Tomkins County, which are somewhat tender, can be grown successfully by root-grafting or by budding on common stock only in favored localities; yet by top grafting on hardy stock they can be satisfactorily grown where only hardy varieties succeed in the ordinary way.

The Talman Sweet is peculiarly adapted for this purpose. Next to the Crabs and the Duchess of Oldenburg, it is the hardiest of all known varieties. Indeed, I have found it to be quite equal to the Duchess in this respect. I have known trees of it so mutilated by cattle and horses as to be considered completely destroyed, yet, when given a fair chance, recovered and became remarkably healthy and good bearing trees. In fact, there is no kind of apple tree that will stand as much hard usage and survive. It is less particular as to soil and situation than any other kind of apple tree. It endures dry seasons better than most sorts. Its bark being of a thick, tough, leathery nature, soon overgrows almost any wound; and good, sound grafts inserted into its branches seldom fail to grow. Its growth is very much of the same habit as that of the Duchess, throwing out its branches at nearly right angles with the trunk; unlike the Spy, which forms forked crotches that readily split when the tree comes to mature age. I have never known a Talman Sweet tree split at the crotches by weight of fruit, by accumulations of ice or by wind storms. In short, it is the most enduring kind of apple tree that I know of.

It should be observed that in top-grafting any kind of apple tree, the whole top should not be cut off at once, because the too severe check is apt to kill the tree. A far better way is to make a two or three years' process of it; the first and second year grafting only each alternate side branch, and, finally, the third year grafting the top branches.

Branches into which grafts are to be inserted should not be cut off too close to the trunk, where they are of large size, but rather where they are subdivided into branches about 1 or $1\frac{1}{4}$ inches thick; then the joint quickly heals over; whereas, when grafts are inserted into the side of a large stump they are much more readily broken off.

There are now growing throughout the country a great many Talman Sweet trees—perhaps more than of any other variety of apple. I know of many instances where orchards were planted years ago, and now all that remains of them is the few Talman Sweet trees which constituted part of the selection.

The Talman is by common consent adjudged to be the best baking apple; yet it is hardly salable in any market in Canada; therefore, it is of little value beyond what is required for family use, and for that purpose one or two trees in an orchard is sufficient. If all the others were top-grafted with choice sorts there might be much more good fruit grown.

The Ben Davis. Perhaps there is no apple about which more difference of opinion exists than the Ben Davis. Like the Kieffer pear, the Crescent strawberry, the Lombard plum, and the Concord grape, we might say of the Ben Davis that, while far from being the first of its class in quality, it stands at the head for productiveness and consequent profit. The early orchardists in Ontario planted their commercial orchards with the Baldwin but

now find that in many localities instead of being the most productive, it is the least so; orchardists in the western states, on the other hand, have planted the Ben Davis in their commercial orchards, and in fruitfulness at least it has not disappointed them.

In southern Ontario many of the best orchards of Baldwin have been almost barren for the last half decade of years, and it is for this reason we bring under the notice of the owners an apple which is not a failure in this respect at least. The late P. C. Dempsey, who was our director for Prince Edward county, had great confidence in the Ben Davis, and in our report for 1893, page 7, he says; "I can make more money out out of one tree of the Ben Davis than I can off fifty Kings. We have a lot of trees of the latter variety twelve years planted, and have never realized twelve barrels off them, but we have taken that many off a single tree of the Ben Davis. For market value, we find that in England the Ben Davis has sold as high as 32s. a barrel.

At our meeting in Peterborough last December, Mr. Alex. McNeill championed the Ben Davis. He said, "The Ben Davis is like a piece of cork in the fall or winter, but in the months of January, February and March, a well-grown Ben Davis is just as nice an apple as I want to eat, and I am very particular in my choice of an apple, too. As for profit, I believe there is no apple grown that will give you as much." Mr. Stenson, of Peterborough, said, "I planted seventeen trees of the Ben Davis sixteen years ago. They began bearing in six years, and have been bearing ever since. This last year I took eighty-six bushels off those trees—eighty of them good salable apples. I would sooner grow the Ben Davis at 50 cents a bushel than any other apple at $1." Mr. Stenson's method of handling them is to store them until the 20th of May, when he ships them to England, and gets the top price in the market.

On the other hand, it is urged by some apple growers, whose experience is equally reliable, that when planting an orchard we should choose varieties of better quality than the Ben Davis, because the time will come when quality must rule in the markets. At our meeting in Windsor, Mr. Elliot spoke as follows concerning this apple: "No doubt the Ben Davis sells well, but I think a man who charges his neighbor $2 for a barrel of Ben Davis robs him of $1.75. It may do very well for hotel-keepers, for one barrel of them will last a first-class hotel as a dessert apple about three months, whereas a really good apple will not last a week. If you send a boy into the cellar for an eating apple, he never brings a Ben Davis, and if your wife wants to please you with an apple dumpling, she does not choose the Ben Davis."

Mr. A. McD. Allan said at the same meeting, "Although good prices are now paid in England for the Ben Davis, it is bound to come down in value before very long. The fact is they are looking into the quality of apples in those markets more closely than the consumers in our own markets."

The estimation in which this apple was held by our fruit committee is shown by the rating they gave it, viz., dessert, 0, cooking, 1, home market, 8, foreign market, 9; —only 18 points out of a maximum of 40.

At Chicago the Ben Davis was one of the finest looking apples shown by Idaho, Oregon and British Columbia. As grown in those quarters, the apple is twice the size of those grown in Ontario, and more highly colored; while the Spy, one of our best quality apples, is a miserable failure. No wonder the Ben Davis is the great apple of the west.

We cannot better describe this variety than by quoting from A. J. Downing's great work. He says, "The origin of this apple is unknown. J. S. Downer, of Kentucky, writes that old trees are there found from which suckers are taken in way of propagating. The tree is very hardy, a free grower, with very dark reddish brown, slightly grayish young wood, forming an erect, round head, bearing early and abundantly. In quality it is not first rate, but from its early productiveness, habit of blooming late in spring after late frosts, good size, fair, even fruit, keeping and carrying well, it is very popular in all the southwest and west.

Fruit, medium to large. Form, roundish, truncated conical, often sides unequal. Color, yellowish, almost overspread, splashed and striped with two shades of red, and

dotted sparsely with areole dots. Stalk, medium, rather slender. Cavity, narrow, deep russetted. Calyx, partially open. Basin, wide, abrupt, slightly corrugated. Flesh, white, tender, moderately juicy, pleasant subacid. Core, medium to large. Good to very good. December to March.

Pears.

The Howell. Of the pears grown for market at Maplehurst, one of the most satisfactory of its season is the Howell. Its size, freedom from scab, worm holes and other blemishes, and clear, yellow skin at maturity, combine to make it a very attractive pear for market. It ripens about the end of September, just when the Bartlett season is over. We do not know of any other variety more desirable at this season, unless we except the Duchess which is often very inferior in appearance owing to curculio knots. The Sheldon, of course, surpasses them all for dessert purposes, but the tree is not nearly so productive and the fruit is not more attractive in appearance. In the estimation of fruit growers generally, the Howell is one of the best of the varieties of American pears.

The tree is an upright, vigorous grower and very productive.

The pear is thus described by Downing: Fruit rather large, roundish, pyriform; light, waxen color, often with a finely shaded cheek, thickly sprinkled with minute russet dots and some russet patches; stalk medium length, inserted without cavity, sometimes by a ring or lip sometimes in a small cavity; calxy open; segments recurved; basin rather large and uneven; flesh whitish, juicy, melting, brisk, vinous. Quality very good; season, September, October.

It originated with Thomas Howell, of New Haven, Conn.

The Dempsey. On the occasion of our visit to the Trenton Apple and Pear Experiment Station, Mr. W. H. Dempsey pointed out to Prof. Hutt the original tree of the Dempsey pear. It was of good size and thrifty growth, but had been annually robbed of its young wood for propagating purposes. It was about 20 feet high and the trunk 6 or 7 inches in diameter. We brought with us a fine sample, which by measurement was 4 inches in length and 3¼ in thickness at its widest part. The pear, at the time of writing, is firm and good for keeping some time yet, thus covering a season in the market, when the Bartlett is entirely cleaned out, unless kept in cold storage. It so much resembles Bartlett that it could be well sold for that pear, but its flesh is essentially different, though scarcely inferior.

The pear is the product of many experiments in hybridizing conducted by the late P. C. Dempsey, father of the present experimenter, and we are glad that so good a fruit bears his name. The tree was grown from a seed of the Bartlett and fertilized with the Duchess d'Angouleme. It is an upright, good grower; foliage large, glossy, dark green, resembling both parents.

The Anjou. The late M. P. Wilder, who was for so many years at the head of the American Pomological Society as its revered President, has the honor of introducing to American fruit growers this excellent early winter pear, the Beurre d'Anjou.

Its name would seem to imply that it is of French origin, but it is said to have first originated in Belgium, whence it was brought into France, and it soon became one of the most popular varieties in that country.

This pear was also the favorite of the late Patrick Barry, former President of the Western New York Horticultural Society. In January, 1888, he exhibited the most magnificent specimens of Anjou pears that we ever saw, at a meeting of that society held in Rochester on the 26th of January. They were quite large and yellow. He had kept them in a cool room, and they were in prime condition for eating, though a month after their usual season. "As an early winter pear the Anjou is unequalled," were the words of this veteran pomologist at that time. Had the Anjou a red cheek like that of the Clairgeau, it would be generally accepted as a perfect market pear, but its dull color, at least until it yellows up, is somewhat against it in the market.

The late E. Moody, of Lockport, N.Y., remarked, at the same meeting, that with him the Anjou had suffered considerably from the blight, but that otherwise he considered it a magnificent variety, and worthy of being planted much more extensively than it is at present. Others stated that they had not found it to be any more subject to blight than other varieties, and with this the experience of the writer agrees.

"The Anjou is one of the most profitable pears for the orchard," was the testimony of the late A. J. Downing, "bearing abundantly and evenly, whether grafted upon the pear or upon the quince stock." With regard to the profits of growing this or any other kind of pears, however, times have wonderfully changed during the last twenty years. In the year 1869, Mr. P. T. Quinn published a book on pear culture, the reading of which filled the writer with dreams never to be realized. He stated in that book that pears would bring an average of some $20 or $30 per barrel, and that they were, by all odds, the most profitable of all fruits.

Certainly, at such prices, they would be, but the cold reality is a little different nowadays, when we find the average is scarcely $3 per barrel, for our finest varieties.

In this connection it will be of interest to include Charles Downing's description of the Anjou pear: Fruit, large, obtuse pyriform; stem, short, thick and fleshy, inserted in a cavity, surrounded by russet; calyx, very small, open, stiff, in an exceedingly small basin, surrounded by russet; skin, greenish, sprinkled with russet, sometimes shaded with dull crimson, and sprinkled thickly with brown and crimson dots; flesh, whitish, not very fine, melting, juicy, with a brisk, vinous flavor, pleasantly perfumed; very good to best. October, November.

Grapes.

Moore's Early. One of the best black grapes for northern sections is the Moore's Early. Both the wood and the fruit ripens early, two all-important characteristics; while the quality is pretty good, superior to its competitor in early ripening, the Champion, if not quite as productive. It is hardier than Concord, which variety it precedes from two to three weeks in time of ripening, and by some is thought to excel it also in quantity.

The bunch is medium, shouldered, compact; the berry, large, round, black, with a heavy blue bloom, and the vine is hardy and moderately productive. After the fruit is ripe the berries are included to drop, and when gathered it soon deteriorates in quality.

The Moore's Early grape was raised by Mr. J. B. Moore, Concord, Mass., and was first exhibited before the Horticultural Society of that State, in the year 1872, gaining the first prize for the best early grape.

Mr. R. B. Whyte, of Ottawa, says that with him the Moore's Early ripens from the last of August to the middle of September; and he would place it first among the black grapes suitable for the Ottawa Valley.

Mr. Robson, of Lindsay, considers it one of the best black grapes for his section, on account of its quality and its earliness.

Mr. John Craig, Horticulturist, Experimental Farm, Ottawa, writes: The Moore's Early ripened in 1890 at Ottawa on Sept. 6th—five days after Champion Last year all varieties in this vicinity were a week to ten days later in ripening than usual. Moore's Early matures Sept. 14th—seven days after Champion. Its good points are its early ripening habits, hardiness and freedom from mildew. Among its weak points may be noted, slowness of growth, and, on some soils, lack of vigor, light bearing habits and perishable character of fruit. As an amateur variety in northern localities and for near market, Moore's Early has much value. As a commercial variety in grape-growing sections, I should not care to advocate the planting of this in a large way for profit.

Mr. D. Nicol, Cataraqui, says: What I have seen of Moore's Early grape, I believe it is well suited for this district. It ripens earlier than the Worden, and the fruit is of large size; quality as good, yet I cannot say it is more productive.

Mr. Thos. Beall, Lindsay, says: Every grower of grapes for family use should have a few vines of Moore's Early; but the quantity of fruit produced is so small, it is worthless as a market variety.

The Wilder. Every year it is becoming more and more a question with the fruit growers, which he should rank first in importance, quality or droductiveness, when he is planting for profit. The Concord grape for instance, is one of the most productive varieties that grows, but its quality is second-rate, and consequently the market price is every year tending downwards. Last year many growers had to content themselves with $1\frac{1}{4}$ to $1\frac{1}{2}$ cents a pound, a very low figure in consideration of the care of the vineyard, the trellising, harvesting, and purchase of baskets. Should this tendency continue, there will soon be no profit at all in growing such varieties. But with grapes of such excellent size and quality as the Wilder, there is no danger of low and unremunerative prices. By common consent this grape is counted one of the most showy of American out door black grapes, for exhibition purposes, and one of the best for dessert purposes.

At Maplehurst this grape has not been largely planted for market, because it is somewhat subject to mildew and rot, and is not always productive. But since we have learned so well the benefit of using copper sulphate in our vineyards to destroy the fungi, there is no reason why we should not henceforth plant this variety more freely. To get the best results it should be trained on the renewal system, having two arms of old wood on the first or lower wire, and training the young growth upward. Every year the alternate uprights are to be cut out to the bud nearest the old wood, and those left will bear freely.

The Wilder, or Rogers' No. 4, was raised by Mr. E. S. Rogers, of Salem, Mass., and it is counted one of the best of his numerous hybrids, being not only large and beautiful in fruit, but the vine is also vigorous, hardy and productive.

The following description is from the Bushberg catalogue:

Bunch large, often shouldered, sometimes weighing a pound; *berry* large, globular; *color* dark purple, nearly black, slight bloom; *flesh* tolerably tender, with a slight pulp, jucy, rich, pleasant and sweet. Ripens with, and sometimes earlier than the Concord, keeping for a long time. The vine is vigorous, healthy, hardy, and productive; roots abundant, of medium thickness, straight, with a smooth, moderately firm liber; canes heavy and long, with well developed laterals. Wood firm, with a medium pith.

The Agawam. For the dessert dish, nothing is more attractive than a collection of grapes, assorted according to color, and on this account care should be taken in planting to include about an equal quantity of red, white and black varieties. It does not matter whether for home use or for shipping, for the buyers in the large towns also have eyes for the beautiful, and will buy such packages as contain assorted colors sooner than such as have all one color.

Of red varieties, the following list was approved of by the New Jersey Horticultural Society in 1884, in order of excellence: Brighton, Agawam, Delaware, Salem, Catawba, Jefferson and Lindley. Of these, the Brighton is a general favorite, but of too thin a skin to endure a long shipment. In our opinion, the Brighton is a delicious grape. The Delaware is tender and sweet; it is usually esteemed to possess the highest quality of any grape, and truly its delicate little berries of diminutive size seem just suited to place before royalty itself. At Chicago, the Delaware was sold in small five-pound baskets, and in three-pound pasteboard boxes, and was in great demand; while, later in the season, the Catawba took the precedency, owing to its keeping qualities; a grape which does not ripen well at the north, except in favored localities.

The Agawam is a seedling grape, raised by E. S. Rogers, of Salem, Mass. The vine is vigorous and productive, but in wet seasons it is liable to mildew, though not as badly as No. 22 (Salem); the bunch is variable in size and shape; berries large, roundish, dark red or maroon; flesh tender, juicy, sweet, with a native musky aroma. This is considered by many one of the best of Rogers' seedlings, but in Canada we give greater preference to the Lindley for market purposes, as being earlier and more productive, and of a brighter shade of red.

The experience of fruit growers in various parts of the province concerning this grape is shown by the following extracts from the letters just to hand:

Mr. E. Morden, Niagara Falls South, writes, "The Agawam is a very large red grape, of quality inferior to the Salem, but not quite as liable to mildew.

Thomas Beall, Lindsay, writes, "The Agawam grape is profitably grown here, principally because of its excellent keeping qualities and its fine flavor. We do not place it on the market until November, or in December, when the cheaper varieties are gone. A good price is then obtained for them. The best results seem to be obtained when grown near some variety producing more pollen.

Mr. A. M. Smith, St. Catharines, writes, "The Agawam has been very subject to mildew with me, otherwise I consider it as good as any of Rogers' red grapes."

Mr. Alexander McNeill, of Windsor, writes, "The large berry and thick skin of the Agawam make it an excellent keeper and shipper. The vine is vigorous and usually healthy, but the fruit is subject to rot. This, together with its loose and usually small bunch, render it unprofitable at even three times the price of the Concord. Those who want a fairly good grape in December or January, and will spray carefully, will find the Agawam worth planting."

Mr. John Craig, of Ottawa, writes, "The vine is a strong, free grower, inclined to mildew; bears profusely; bunch and berry large; color, dark crimson; very rich; juicy; of first quality; skin, thick; keeps well without losing its flavor. In this section it does not ripen to perfection every season. Recently it has been shown that the Agawam is one of those varieties which does not perfectly fertilize itself, and, therefore, needs to have some strong bloomer, like the Concord, growing with it to produce the best results."

Mr. M. Pettit, of the Winona Experimental Station, writes, "The Agawam, on heavy soil, with the free use of sulphur, is the most satisfactory grape I grow. It is a regular and heavy bearer, a good shipper, a good keeper, and good demand in the market.

Strawberries.

Of thirty varieties in my experimental plantation the *most productive* in the season of 1894 were Williams, Bubach, Haverland, Saunders and Enhance. The *earliest* were Michels Early, and Bubach 24, both of which gave their first picking on June 10th, while most of the others did not give their first picking until the 18th.

Bubach 5 is one of the best market berries; and always averages larger than any other variety. It is pistillate, very productive, and endures the drouth well.

Saunders compares favorably with Bubach in size and excels it in productiveness. The fruit is large, conical, slightly flattened; color, deep red; glossy; flesh red; flavor, sprightly and agreeable; excels Bubach in quality.

HINTS FROM SISTER SOCIETIES.

Transplanting Onions.

Mr. C. B. Waldron, of the North Dakota Experimental Station, says that his attempts to grow onions in the ordinary way have generally failed, but he has succeeded well by transplanting. For example, on April 4th, seeds of a number of varieties were sown in shallow boxes in the greenhouse. When the plants came up the average stand was about 500 to the square foot. May 23, these small onions, with a diameter slightly greater than that of an ordinary wheat straw, were transplanted to the open ground 5 inches apart in the drill. On the same date and on similar soil, seed of the same varieties were sown. The rainfall from above date until June 30 was 3.62 inches, for July 2.21, and for August 2.72.

The onions were harvested September 22. At this time all of those which had been transplanted were mature, while of the others only the early pickling sorts and the Extra Early Red had thoroughly ripened. Only 5 varieties out of 26 planted made a satisfactory stand from seed. The following table gives the relative yields from the two methods of culture :

RELATIVE YIELDS OF ONIONS TRANSPLANTED AND GROWN FROM SEED.

Variety.	Weight of trans-planted.	Weight of non-trans-planted.
Early Red	71	14½
Red Victoria	53	7
White Victoria	56½	11
Silver White Ætna	65	13
Yellow Globe Danvers	47	12

The author estimates that about 84 square feet of glass are necessary to furnish plants sufficient for one acre, and that the cost of transplanting an acre is about $10.

When the saving of seed is taken into account, it is doubtful if the expense of growing a crop in the old way is less than by the method of transplanting. Transplanting onions produced large, regular, mature bulbs, greatly excelling the others in keeping and market qualities.

FRUIT PACKING AND GRADING.

The following hints on this important theme of packing and grading is from the Report of the Pennsylvania Horticultural Society.

Fruit and garden producers are much in need of a general system for grading. We must have legislation and co-operation as well as the enforcement of such laws enacted by our legislature. To-day, we have men authorized to inspect flour, coal, oil, whiskies, etc., placing their official mark on each article inspected. These are bought and sold by the grade as marked upon each case. Fruit is used extensively every day in every state of our Union, and yet no system of grading or inspection is in force.

Grading fruit is not simply separating the better from the inferior ; there is another grading which is pre-eminent, uniform measure. Our old standard measures of a half bushel and peck have become so old-fashioned they are a mere figure-head with many fruit dealers. The per cent. of fruit and vegetables thus measured is exceedingly small. Barrels, crates, baskets, berry-boxes, etc., are now used to carry fruit and ship to distant markets. No fault is to be found with the box, barrel or crate, but in the matter of sizes specified regulations should be adopted. I have found baskets holding ⅝, ½ and 7-16 bushels. Each of these sizes is a basket of the original intention. Probably no wrong was intended, but the matter of sizes has opened the doors wide for the perpetration of fraud. The inexperienced, thinking a basket means a half bushel, offer their produce at so much per basket. The buyer brings out his ⅝-bushel basket and wants it filled round full. The farmer figures 20 bushels will fill 40 half bushel baskets, but when he counts the baskets only 32 are found. A dispute at once arises, but being sold and bought by the basket, the producer takes his pay and departs. The dealer fills his 7-16 bushel or 14 quart basket and then has 45.6 baskets. The dealer paid for 32 but now sells 45⅗, gaining 13⅘ baskets on the 20 bushels. Frequently such dealers are the loudest complainers.

We need wise legislation and the co-operation of good, honest merchants, backed by every horticultural association in the country, against tricksters of this kind. Barrels, crates, baskets, boxes, etc., should be of established sizes and so easily distinguishable that every buyer and seller knows what he buys and sells. The size of pint and quart berry boxes sometimes returned in crates is often surprising. Every manufacturer has his own notion about the size, or else in his calculation must figure on liquid measure. Crates have never been returned to me with boxes of different makes of the same size.

Careful picking, careful handling, scrupulously clean baskets and boxes, free from last year's mould and stains, add largely to quick sales and better prices. Often one poor over-ripe berry prevents the sale of the box, one inferior peach lessens the value of the

whole basket; one bruised, brown spotted pear rots the whole basket. As there is no established schedule, I present my idea through observation at home and abroad. Fruit grading should be either for the home market or those most distant. First-class fruit should be the largest, most highly-colored and most perfectly matured growth. Second-class, fair size, with only such slight defects as debar from the first-class. Third-class, wormy, scabby, irregular. Culls, such as will not pass as third-class and rather better than need be for cider vinegar. One schedule will not do for all fruits. As the fruit differs so will its schedule.

To have a first-class pear we must try and grow it, have it well developed, gather it at the proper time, and be well colored in ripening. Study the market, using judgment in the assorting for shipment or the home market. The fruit packed in a crate should be alike in time of ripening. Never pack pears too highly ripened or the whole box may be lost. Always sell the highly ripened pears at home. Have first, second and third class, grade them carefully and wrap in thin paper to prevent chafing. Never use boxes too large; a half bushel is large enough. The sides of the box should be planed to prevent discoloring of the fruit; then if properly handled the fruit will open beautifully, and you will stand a good chance of receiving remunerative prices. Never ship wormy or scabby pears; sell them at home. Neither ship with broken stems.

Peaches should be graded when the season permits. Varieties differ in size, so the number of peaches depends on the size to fill a half-bushel basket. When they run very large I grade them 60 to 70, 70 to 80, 80 to 90 or 100, 100 to 150 peaches to the half bushel. Always have the fruit uniform from top to bottom; never put bitter, insipid, imperfect fruit at the bottom and top off with a few good peaches and a sprig of leaves —your brand will soon be known in the market. Apples are mostly sold by the barrel, having a layer at top and bottom with culls and wormy fruit between. Such apples are of but little use on the English market, for there the fruit must be uniform and well colored. It is said that three wormy apples would condemn the whole barrel. Good apples always command a fair price either at home or abroad. The continent and English market prefers red apples. In America, red, green or yellow are desirable in localities, and every grower must study the wants of his market, as only those who make apple culture a study and a business can know how much they will feel the tender touch of man's kind and proper treatment. Whether we shall have poor, scrubby, wormy, or fine well-grown, richly colored, delicious fruit, such as the ancients would have offered to their gods, is now a matter of choice with each fruit-grower.

Graded fruit or vegetables are noticed by prince and peasant, and if the peasant knows how to grade, the prince is ready to buy simply because it appears nice and catches the eye. In many instances it may not be the quality as much as the care in preparing for market. Citrus fruits represent a class of which there is no better graded in the world. Especially is this true of Florida and California oranges. The fine grading of this class of fruit was brought about a dozen years ago by a packing house on the St. John river, Fla. As they were constantly buying, they were able to grade and wrap the fruit. This soon became an established business throughout the states. Since orange shipping from Florida to Savannah first took place, the grading of the orange has taught shippers all over the country a lesson, until California ships its fine plums, apricots, peaches, pears, and other fruits, so that now it is almost as common on the stands of fruit vendors as our own.

Fancy Fruit.

The art does not belong to everyone of putting up fruit in fancy style so as to command prices above the ordinary. The first point is, of course, to produce such fruit by extraordinary care in cultivation, manuring, pruning, etc. The great importance of an attractive label should also be considered; white paper with blue lettering is attractive, and should have printed upon it the grower's name and the nature of the goods, grade, etc. This can easily be pasted on each wooden package.

Picking, grading and packing choice fruit is a work of art, and unless a man has it in him, he cannot learn it by reading. All fancy fruit should be wrapped in dainty wrappers, white tissue is best, with the grower's name in bright blue ink. How beauti-

fully such a label will blend with the scarlet and gold of a fancy Crawford peach! Who could pass a box of peaches so wrapped, and placed in shallow crates in layers and rows, without buying them? while the same person might pass a box or basket of unassorted fruit without notice. The proper grading is best done by having a packer for each grade, and when a basketful is turned out on the packing table each one selects fruit to suit his class, as, for example, extra selected, selected and 1st class; and what remains is sold as 2nd class, if at all. A Californian packer gives the following as his system of grading peaches for market; and in reading observe that instead of the term we use, he employs the primes, extras, and standards:

"Before closing I will, in as few words as possible, explain my system of grading for market. Primes, or first grades, are packed 48 to 52 to the box six by four, top and bottom, or permissibly seven by four at the bottom. They must be nearly uniform in size, so as to pack square and snug, fitted in just so tight that the filled box may be set on end without its contents falling out, this holds good moreover of each and every grade.

"Extras, or second grade, go 56 to 63 to the box, two rows of seven by four each, or, for the higher number, a bottom row of seven by five.

"Standards, or third grade, should not exceed 80 peaches to the box, eight rows of five each top and bottom; anything running smaller than this I rate as culls, to be used for domestic purposes or sale to the canner or dry house."

INDEX.